TSI 133 MATH Shop

TSI 133 Multiple Choice

1. Find $f(2)$ if $f(x) = 8000(1.04)^x$

   (a) $f(2) = 8152.60$ (b) $f(2) = 8442.90$

   (c) $f(2) = 8652.80$ (d) $f(2) = 8452.80$

2. Find C if $C = \frac{5}{9}(F - 32)$ and $F = 86$

   (a) $C = 10$ (b) $C = 20$

   (c) $C = 30$ (d) $C = 40$

3. Find y if $y = 2x^2 - 4x - 6$ and $x = -2$

   (a) $y = 40$ (b) $y = 20$

   (c) $y = 10$ (d) $y = 12$

4. Evaluate $(x + 3)(x + 4)$ if $x = -4$

   (a) 12 (b) 4

   (c) 0 (d) -4

5. Find P if $P = 2(L + W)$, $L = 6$, and $W = 2$

   (a) $p = 18$ (b) $p = 10$

   (c) $p = 16$ (d) $p = 12$

6. Find $f(4)$ if $f(x) = \frac{x + 18}{x - 3}$

   (a) $f(4) = 10$ (b) $f(4) = 30$

   (c) $f(4) = 22$ (d) $f(4) = 28$

7. Find C if $C = P + 0.05P$ and $P = 30$

   (a) $C = 40.60$ (b) $C = 43.50$

   (c) $C = 31.50$ (d) $C = 33.50$

8. Find $h(2)$ if $h(x) = -16x^2 + 32x$

   (a) $h(2) = 32$ (b) $h(2) = 12$

   (c) $h(2) = 0$ (d) $h(2) = 10$

9. Find y if $y = 31.95x + 0.10m$, $x = 5$, and $m = 200$

   (a) $y = 199.55$ (b) $y = 166.55$

   (c) $y = 179.75$ (d) $y = 189.75$

10. Find $Pr - r$ if $P = -9$ and $r = \frac{1}{2}$

(a) -6 (b) 6

(c) -5 (d) 5

11. Find y if $y = \sqrt{x+1} + 8$ and $x = 0$

(a) $y = 2$ (b) $y = 7$

(c) $y = 9$ (d) $y = 4$

12. Find $g(2)$ if $g(x) = \dfrac{x}{1-x}$

(a) $g(2) = 0$ (b) $g(2) = -4$

(c) $g(2) = -2$ (d) $g(2) = 2$

13. Find $f(-3)$ if $f(x) = |x - 2|$

(a) $f(-3) = 9$ (b) $f(-3) = 0$

(c) $f(-3) = 5$ (d) $f(-3) = 8$

14. Find $f(-1)$ if $f(x) = 4x^2$

(a) $f(-1) = -1$ (b) $f(-1) = -4$

(c) $f(-1) = 4$ (d) $f(-1) = 8$

15. Find $f(-1)$ if $f(x) = \dfrac{x-1}{x^2-9}$

(a) $f(-1) = -4$ (b) $f(-1) = 3$

(c) $f(-1) = \dfrac{1}{4}$ (d) $f(-1) = \dfrac{1}{3}$

16. Find $f(1)$ if $f(x) = (x-1)^2 + 8$

(a) $f(1) = 4$ (b) $f(1) = 12$

(c) $f(1) = 8$ (d) $f(1) = 10$

17. Find 5^{-2}

(a) -10 (b) -25

(c) $\dfrac{1}{25}$ (d) $-\dfrac{1}{25}$

18. Find A if $A = \pi r^2$ if $\pi = 3.14$ and $r = 4$

(a) $A = 80.24$ (b) $A = 70.24$

(c) $A = 50.24$ (d) $A = 60.24$

19. Find $x - y$ if $x = \dfrac{1}{4}$ and $y = -x$

(a) $\frac{1}{3}$ (b) $-\frac{1}{3}$

(c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

20. Find the average of 2800, 1800, 1000, 1400, and 2300

(a) 1460 (b) 1760

(c) 1860 (d) 1960

21. Solve $4x + 1 = 10$

(a) $x = -\frac{9}{4}$ (b) $x = \frac{1}{4}$

(c) $x = \frac{9}{4}$ (d) $x = \frac{3}{4}$

22. Solve $1 + \frac{6}{x} = -23$

(a) $x = \frac{1}{8}$ (b) $x = \frac{1}{3}$

(c) $x = -\frac{1}{4}$ (d) $x = \frac{3}{4}$

23. Find y if $3x + 2y = 90$ and $x = 10$

(a) $y = 40$ (b) $y = 20$

(c) $y = 30$ (d) $y = 10$

24. Solve $\frac{3}{2}x + 1 = 5$

(a) $x = \frac{5}{3}$ (b) $x = \frac{2}{3}$

(c) $x = \frac{8}{3}$ (d) $x = \frac{1}{3}$

25. Solve $7x - 2 = 5 + 3x$

(a) $x = \frac{3}{4}$ (b) $x = 4$

(c) $x = \frac{7}{4}$ (d) $x = \frac{1}{4}$

26. Solve $6x + 12 = 2x$

(a) $x = 5$ (b) $x = 4$

(c) $x = -3$ (d) $x = 3$

27. Find c if $k = c + 294$ and $k = 10$

(a) $c = 204$ (b) $c = 104$

(c) $c = -284$ (d) $c = 284$

28. Solve $8 - x = 2(x - 8)$

(a) $x = 6$ (b) $x = 3$

(c) $x = 8$ (d) $x = 4$

29. Solve $\frac{x}{9} = \frac{x+1}{10}$

(a) $x = 0$ (b) $x = 1$

(c) $x = 9$ (d) $x = 4$

30. If $2x + 1 = 4$, find $12x$

(a) 10 (b) 12

(c) 18 (d) 16

31. Solve $3 = \frac{12 - x}{x}$

(a) $x = 1$ (b) $x = 6$

(c) $x = 3$ (d) $x = 4$

32. Find a if $ax - 25 = x + 2$ and $x = 3$

(a) $a = 3$ (b) $a = 4$

(c) $a = 10$ (d) $a = 2$

33. Solve $6(x - 2) - 20 = 2x$

(a) $x = 0$ (b) $x = 3$

(c) $x = 8$ (d) $x = 9$

34. Solve $5x = 12 + 2x$

(a) $x = 1$ (b) $x = 2$

(c) $x = 4$ (d) $x = 9$

35. Solve $x - 8 = 3x - 8$

(a) $x = 1$ (b) $x = 3$

(c) $x = 0$ (d) $x = 2$

36. Solve $x - 8 = 8 - x$

(a) $x = 3$ (b) $x = 7$

(c) $x = 8$ (d) $x = 4$

37. Solve $3x = 2(x + 8)$

(a) $x = 2$ (b) $x = 18$

(c) $x = 16$ (d) $x = 17$

38. Solve $\frac{2}{5x} + \frac{1}{x} = 14$

(a) $x = 5$ (b) $x = 3$

(c) $x = \frac{1}{10}$ (d) $x = \frac{3}{10}$

39. If $2x + 1 = 4$, find $x + 2$

(a) 2 (b) 3

(c) $\frac{7}{2}$ (d) $\frac{3}{2}$

40. If $4x - 1 = x$, find $30x$

(a) 40 (b) 12

(c) 10 (d) 11

41. Solve $-2x < 8$

(a) $x > 4$ (b) $x < 4$

(c) $x > -4$ (d) $x < -4$

42. Solve $2x < -6$

(a) $x > 2$ (b) $x < 2$

(c) $x < -3$ (d) $x > -3$

43. Solve $\frac{x}{4} + \frac{3x}{8} > 20$

(a) $x < 8$ (b) $x > -32$

(c) $x > 32$ (d) $x < 32$

44. If $xy = k$ and $x = 2$ when $y = 10$, then find x when $y = 5$

(a) $x = 3$ (b) $x = 1$

(c) $x = 4$ (d) $x = 2$

45. Simplify $\left(\frac{12}{x}\right)^2$

(a) $144x^2$ (b) $12x^2$

(c) $\frac{144}{x^2}$ (d) $\frac{12}{x^2}$

46. Simplify $\left(\frac{5}{x}\right)^3$

(a) $25x^3$ (b) $\frac{5}{x^3}$

(c) $\frac{125}{x^3}$ (d) $\frac{25}{x^3}$

47. Simplify $\left(\frac{6k}{2}\right)^2$

(a) $36k^2$ (b) $3k^2$

(c) $9k^2$ (d) $9k$

48. Simplify $p - 0.12p$

(a) $0.08p$ (b) $0.90p$

(c) $0.88p$ (d) $0.80p$

49. Simplify $(3x - 2)(x + 5)$

(a) $3x^2 + 13x + 10$ (b) $3x^2 - 13x - 10$

(c) $3x^2 + 13x - 10$ (d) $3x^2 - 13x + 10$

50. Simplify $(2a - b)(2a + b)$

(a) $4a^2 + 4ab - b^2$ (b) $4a^2 - 4ab - b^2$

(c) $4a^2 - b^2$ (d) $4a^2 + b^2$

51. Simplify $(2a - b)^2$

(a) $4a^2 + 4ab + b^2$ (b) $4a^2 - b^2$

(c) $4a^2 - 4ab + b^2$ (d) $4a^2 + b^2$

52. Simplify $4a^2(ab^2 + b^2)$

(a) $4a^3b^2 - 4a^2b^2$ (b) $a^3b^2 + 4a^2b^2$

(c) $4a^3b^2 + 4a^2b^2$ (d) $4a^3b^2 + a^2b^2$

53. $(2xy^2)(4x^3y^4)$

(a) $10xy^6$ (b) $2x^4y^6$

(c) $8x^4y^6$ (d) $4x^4y^6$

54. $(2xy^4)^2$

(a) $8x^2y^6$ (b) $16x^2y^8$

(c) $4x^2y^8$ (d) $2xy^8$

55. $(3+ax)(2x-1)$

(a) $-6x+3+2ax^2+ax$ (b) $6x+3+2ax^2+ax$

(c) $6x-3+2ax^2-ax$ (d) $6x-3-2ax^2-ax$

56. Find V if $V=\pi r^2h$, $r=3a$, and $h=2a+3$

(a) $V=9\pi a^3+7\pi a^2$ (b) $V=18\pi a-27\pi a^2$

(c) $V=18\pi a^3+27\pi a^2$ (d) $V=18\pi a^2+27\pi a^5$

57. Find N if $a^2+N+6b^2=(a+b)(a+6b)$

(a) $N=3ab$ (b) $N=2ab$

(c) $N=7ab$ (d) $N=6ab$

58. Find C if $(3x-2)(4x+C)=12x^2+7x-10$

(a) $C=8$ (b) $C=7$

(c) $C=5$ (d) $C=6$

59. Factor GCF $6x^3-18x^2+6x$

(a) $6x(x^2+7x+11)$ (b) $6x(x^2-3x+11)$

(c) $6x(x^2-3x+1)$ (d) $6x(x^2-3x-1)$

60. Factor GCF $4x^3y-2x^2y^2$

(a) $2x^2y^3(2x-y)$ (b) $2xy(2x+y)$

(c) $2x^2y(2x-y)$ (d) $2x^2y(2x+y)$

61. Factor GCF $4y-2$

(a) $2(2y+11)$ (b) $2(2y+3)$

(c) $2(2y-1)$ (d) $2(2y+1)$

62. If $2x^2 - 4 = m$, then find $x^2 - 2$

(a) $x^2 - 2 = \frac{m}{5}$ (b) $x^2 - 2 = \frac{m}{11}$

(c) $x^2 - 2 = \frac{m}{2}$ (d) $x^2 - 2 = \frac{m}{3}$

63. Factor $a^2 - b^2$

(a) $(a+b)(a+2b)$ (b) $(a-b)(a-b)$

(c) $(a+b)(a-b)$ (d) $(a+b)(a+b)$

64. Factor $x^2 - 25$

(a) $(x+5)(x+15)$ (b) $(x+5)(x+5)$

(c) $(x+5)(x-5)$ (d) $(x-5)(x-5)$

65. Factor $x^2 - 25y^2$

(a) $(x+5y)(x+11y)$ (b) $(x+5y)(x+5y)$

(c) $(x+5y)(x-5y)$ (d) $(x-5y)(x-5y)$

66. Factor $100x^2 - 9y^2$

(a) $(10x+3y)(10x+y)$ (b) $(10x+3y)(10x+3y)$

(c) $(10x+3y)(10x-3y)$ (d) $(10x-3y)(10x-3y)$

67. Factor $\frac{x^2}{9} - 64$

(a) $(3x+8)(3x-8)$ (b) $\left(\frac{x}{3}+8\right)\left(\frac{x}{3}+8\right)$

(c) $\left(\frac{x}{3}+8\right)\left(\frac{x}{3}-8\right)$ (d) $\left(\frac{x}{3}-8\right)\left(\frac{x}{3}-8\right)$

68. Factor $\frac{x^2}{9} - \frac{y^2}{25}$

(a) $(3x+5y)(3x-5y)$ (b) $\left(\frac{x}{3}+\frac{y}{5}\right)\left(\frac{x}{3}+\frac{y}{5}\right)$

(c) $\left(\frac{x}{3}+\frac{y}{5}\right)\left(\frac{x}{3}-\frac{y}{5}\right)$ (d) $\left(\frac{x}{3}-\frac{y}{5}\right)\left(\frac{x}{3}-\frac{y}{5}\right)$

69. Factor GCF $8x^3 + 14x^2 + 12xy$

(a) $2x(4x^2 - 7x - 6y)$ (b) $2x(4x^2 + 11x + 6y)$

(c) $2x(4x^2 + 7x + 6y)$ (d) $2x(4x^2 + 3x + y)$

70. Simplify $\dfrac{x+x^2}{x}$

(a) $1-2x$ (b) $1+2x$

(c) $1+x$ (d) $1-x$

71. Simplify $\dfrac{ab+b}{b}$

(a) $2a-1$ (b) $2a+1$

(c) $a+1$ (d) $a-1$

72. Simplify $\dfrac{5xy+y}{y}$

(a) $2x+1$ (b) $3x+1$

(c) $5x+1$ (d) $5x-1$

73. Simplify $\dfrac{8n+4}{4}$

(a) $2n+5$ (b) $3n+1$

(c) $2n+1$ (d) $2n-1$

74. Solve $2x(x+5)=0$

(a) $\{-2,5\}$ (b) $\{2,5\}$

(c) $\{0,-5\}$ (d) $\{0,5\}$

75. Solve $x^2+8x+12=0$

(a) $\{1,-6\}$ (b) $\{2,6\}$

(c) $\{-2,-6\}$ (d) $\{-2,6\}$

76. Solve $x^2+6x+8=0$

(a) $\{1,4\}$ (b) $\{2,4\}$

(c) $\{-2,-4\}$ (d) $\{-2,4\}$

77. Solve $x^2+x-12=0$

(a) $\{3,7\}$ (b) $\{-3,-4\}$

(c) $\{3,-4\}$ (d) $\{3,4\}$

78. Solve $x^2-x-2=0$

(a) $\{1,3\}$ (b) $\{1,2\}$

(c) $\{-1,2\}$ (d) $\{-1,-2\}$

79. Solve $x^2-12=x$

(a) $\{3, 6\}$ (b) $\{-3, -4\}$

(c) $\{-3, 4\}$ (d) $\{3, 4\}$

80. Solve $x^2 - 6x = -8$

(a) $\{2, 8\}$ (b) $\{-2, -4\}$

(c) $\{2, 4\}$ (d) $\{-2, 4\}$

81. Solve $2x^2 + 5x - 12 = 0$

(a) $\left\{-\frac{7}{2}, -4\right\}$ (b) $\left\{\frac{1}{2}, 4\right\}$

(c) $\left\{\frac{3}{2}, -4\right\}$ (d) $\left\{-\frac{3}{2}, -4\right\}$

82. Solve $3x^2 + 13x = 10$

(a) $\{-3, 5\}$ (b) $\left\{\frac{2}{3}, 5\right\}$

(c) $\left\{\frac{2}{3}, -5\right\}$ (d) $\left\{-\frac{2}{3}, -5\right\}$

83. Solve $2x^2 = -7x - 3$

(a) $\{-2, -3\}$ (b) $\left\{\frac{1}{2}, 3\right\}$

(c) $\left\{-\frac{1}{2}, -3\right\}$ (d) $\left\{-\frac{1}{2}, 3\right\}$

84. Solve $8x^2 - 1 = 7x$

(a) $\left\{\frac{7}{8}, 1\right\}$ (b) $\{-8, 1\}$

(c) $\left\{-\frac{1}{8}, 1\right\}$ (d) $\left\{-\frac{1}{8}, -1\right\}$

85. Solve $2x^2 + 5x - 3 = 0$

(a) $\left\{\frac{1}{3}, \frac{1}{2}\right\}$ (b) $\left\{-3, -\frac{1}{2}\right\}$

(c) $\left\{-3, \frac{1}{2}\right\}$ (d) $\left\{3, \frac{1}{2}\right\}$

86. Solve $x^2 + 8x + 11 = 0$ (use Quadratic formula)

(a) $\{1, 11\}$ (b) $\{-7 - \sqrt{5}, -7 + \sqrt{5}\}$

(c) $\{-4 - \sqrt{5}, -4 + \sqrt{5}\}$ (d) $\{-4 - \sqrt{2}, -4 + \sqrt{2}\}$

87. Solve $x^2 + 2x + 10 = 0$ (use Quadratic Formula)

(a) $\{-5-3i, -5+3i\}$

(b) $\{2-3i, 2+3i\}$

(c) $\{-1-3i, -1+3i\}$

(d) $\{1-3i, 1+3i\}$

88. Solve $(x-2)^2 = 25$

(a) $\{2, 25\}$

(b) $\{3, 7\}$

(c) $\{-3, 7\}$

(d) $\{-3, -7\}$

89. Solve $(x+2)^2 = 7$

(a) $\{-5-\sqrt{3}, -5+\sqrt{3}\}$

(b) $\{3+\sqrt{2}, 3-\sqrt{2}\}$

(c) $\{-2-\sqrt{7}, -2+\sqrt{7}\}$

(d) $\{2-\sqrt{7}, 2+\sqrt{7}\}$

90. Solve $(x-2)^2 - 5 = 0$

(a) $\{-5, 5\}$

(b) $\{2, 5\}$

(c) $\{2-\sqrt{5}, 2+\sqrt{5}\}$

(d) $\{2-\sqrt{3}, 2+\sqrt{3}\}$

91. Solve $\sqrt{x+1} = 5$

(a) $x = 18$

(b) $x = 14$

(c) $x = 24$

(d) $x = 20$

92. Solve $\sqrt{x} + 3 = 10$

(a) $x = 50$

(b) $x = 14$

(c) $x = 49$

(d) $x = 7$

93. Solve $\dfrac{3}{x} = \dfrac{x}{12}$

(a) $\{3, 12\}$

(b) $\{-3, 3\}$

(c) $\{-6, 6\}$

(d) $\{-4, 4\}$

94. Solve $\dfrac{1}{x} = \dfrac{x}{5}$

(a) $\{1, -5\}$

(b) $\{-5, 5\}$

(c) $\{-\sqrt{5}, \sqrt{5}\}$

(d) $\{-\sqrt{3}, \sqrt{3}\}$

95. Solve $7x^2 = 1$

(a) $\{-\sqrt{7}, \sqrt{7}\}$

(b) $\left\{-\sqrt{\dfrac{1}{3}}, \sqrt{\dfrac{1}{3}}\right\}$

(c) $\left\{-\sqrt{\dfrac{1}{7}}, \sqrt{\dfrac{1}{7}}\right\}$

(d) $\left\{-\dfrac{1}{7}, \dfrac{1}{7}\right\}$

96. Solve for r, $A = \pi r^2$

(a) $r = \pi\sqrt{3A}$

(b) $r = \sqrt{\pi A}$

(c) $r = \sqrt{\dfrac{A}{\pi}}$

(d) $r = \pi A$

97. If the area of a square is 100 and each side has a length of $2x$, then find x.

(a) $x = 2$

(b) $x = 10$

(c) $x = 5$

(d) $x = 6$

98. Solve $\begin{aligned} 3x + y &= 7 \\ 5x - y &= 9 \end{aligned}$

(a) $(x, y) = (-2, 7)$

(b) $(x, y) = (5, 9)$

(c) $(x, y) = (2, 1)$

(d) $(x, y) = (-2, -1)$

99. Solve $\begin{aligned} x + 2y &= 7 \\ x - 2y &= 3 \end{aligned}$

(a) $(x, y) = (-2, 7)$

(b) $(x, y) = (-5, -7)$

(c) $(x, y) = (5, 1)$

(d) $(x, y) = (-5, -1)$

100. Solve $\begin{aligned} x - y &= 20 \\ x &= 3y \end{aligned}$

(a) $(x, y) = (1, 10)$

(b) $(x, y) = (10, 30)$

(c) $(x, y) = (30, 10)$

(d) $(x, y) = (10, 40)$

101. Solve $\begin{aligned} x - 2y &= 4 \\ x - 2y &= 5 \end{aligned}$

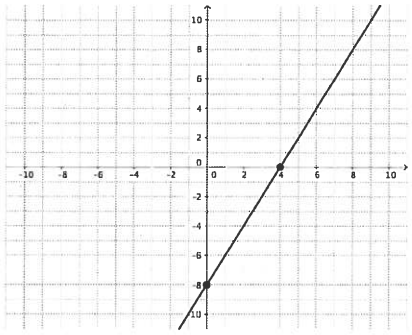
(a) $(x, y) = (4, 5)$

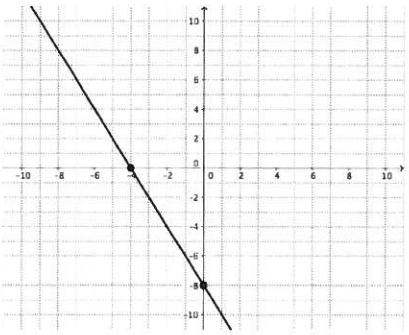
(b) $(x, y) = (-4, -5)$

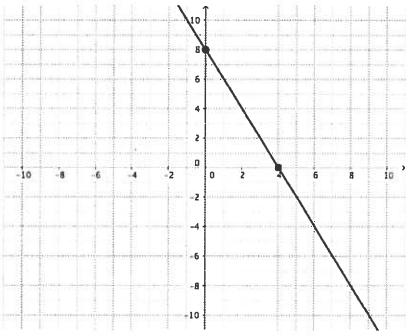
(c) No Solution

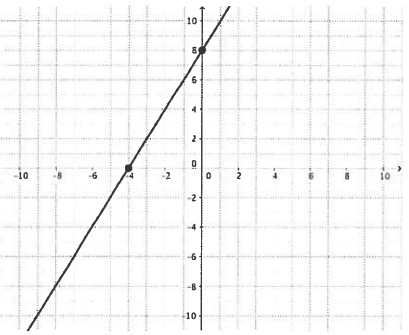
(d) $(x, y) = (1, 9)$

102. Graph $y = -2x + 8$

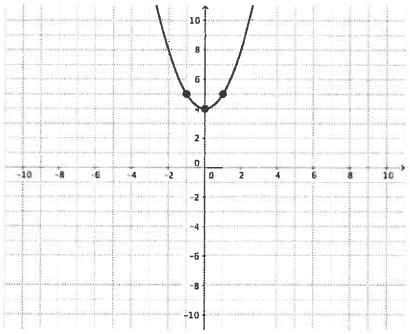
(a) 

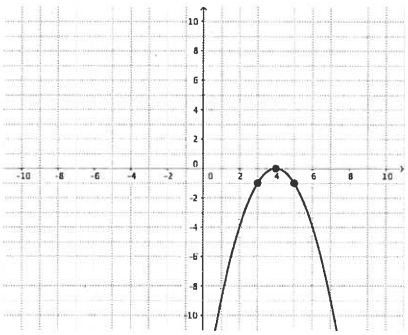
(b) 

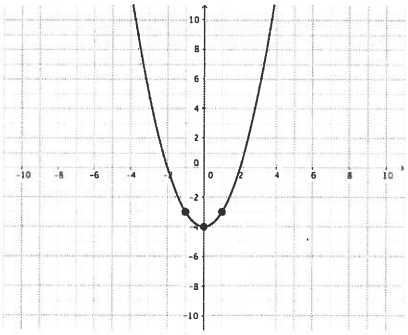
(c) 

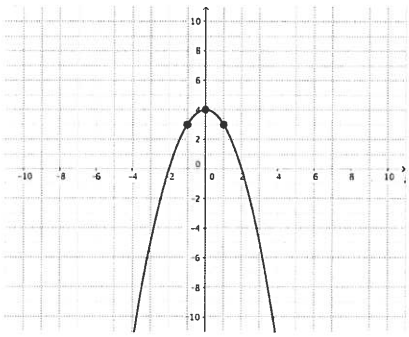
(d) 

103. Graph $y = x^2 - 4$

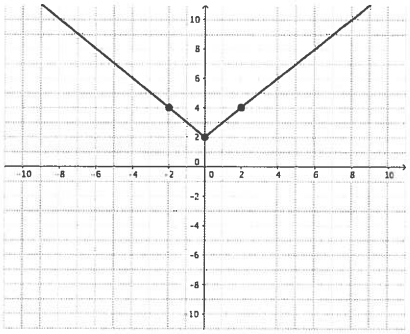
(a) 

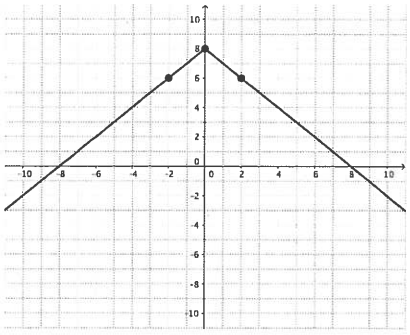
(b) 

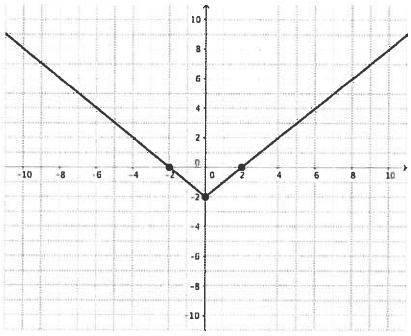
(c) 

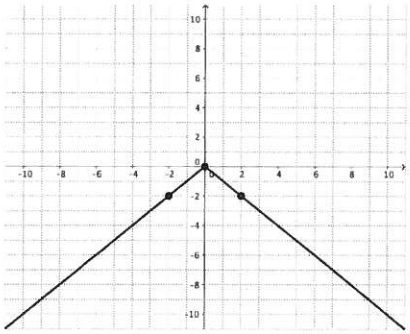
(d) 

104. Graph $y = |x| - 2$

(a) 

(b) 

(c) 

(d) 

105. Simplify $\left(\frac{2x}{3y}\right)\left(\frac{9y}{8x^2}\right)$

(a) $3x$ (b) $\frac{3y}{4x}$

(c) $\frac{3}{4x}$ (d) $\frac{9}{4x}$

106. Solve $x^3 + 6x^2 + 8x = 0$

(a) $\{0, -2, 4\}$ (b) $\{0, 2, 4\}$

(c) $\{0, -2, -4\}$ (d) $\{1, -2, -4\}$

107. Solve $4^3 = 2^k$

(a) $k = 2$ (b) $k = 3$

(c) $k = 6$ (d) $k = 4$

108. If a box has 5 red, 3 green, and 4 blue jelly beans, then what is the probability of choosing at random a red jelly bean?

(a) $\frac{7}{12}$ (b) $\frac{1}{12}$

(c) $\frac{5}{12}$ (d) $\frac{2}{7}$

109. If on a map 1 inch equals 10 miles, then 30 inches equals how many miles?

(a) 3000 (b) 100

(c) 300 (d) 200

110. Find $f\left(\frac{1}{4}\right)$ if $f(x) = \frac{1}{x} + \frac{3}{x}$.

(a) $f\left(\frac{1}{4}\right) = 18$ (b) $f\left(\frac{1}{4}\right) = \frac{1}{8}$

(c) $f\left(\frac{1}{4}\right) = 16$ (d) $f\left(\frac{1}{4}\right) = 10$

111. Solve for x, $\frac{ax - b}{4a - 1} = b$

(a) $x = 5b$ (b) $x = 8b$

(c) $x = 4b$ (d) $x = 3b$

112. If the side of a square is $3x$ and the area is 900, then find x.

(a) $x = 4$ (b) $x = 2$

(c) $x = 10$ (d) $x = 100$

113. If the perimeter of a rectangle is 160 and the width is 30, then find the area of the rectangle.

(a) area $= 300$

(b) area $= 3000$

(c) area $= 1500$

(d) area $= 150$

114. Find $f(8)$ if $f(x) = \dfrac{\sqrt{x}}{2}$

(a) $f(8) = 4$

(b) $f(8) = 2$

(c) $f(8) = \sqrt{2}$

(d) $f(8) = 2\sqrt{2}$

115. Solve $100 = 80 + \dfrac{x}{2}$

(a) $x = 180$

(b) $x = 80$

(c) $x = 40$

(d) $x = 20$

116. Solve $\dfrac{60x}{20} = 18$

(a) $x = 3$

(b) $x = 5$

(c) $x = 6$

(d) $x = 7$

117. Simplify $\dfrac{a^6b^7}{a^2b^9}$

(a) a^4b^4

(b) a^3b^2

(c) $\dfrac{a^4}{b^2}$

(d) $\dfrac{a^5}{b^2}$

118. Solve $\begin{aligned} x + y &= 9 \\ 3x + 4y &= 28 \end{aligned}$

(a) $(x, y) = (5, 4)$

(b) $(x, y) = (4, 4)$

(c) $(x, y) = (8, 1)$

(d) $(x, y) = (6, 3)$

119. Solve $x^2 + 6x - 16 = 0$

(a) $\{2, 8\}$

(b) $\{-1, 16\}$

(c) $\{2, -8\}$

(d) $\{-2, -8\}$

120. Solve $2(x^2 - 6) = 60$

(a) $\{2, 6\}$

(b) $\{-6, 1\}$

(c) $\{-6, 6\}$

(d) $\{6\}$

121. Solve $2(12x^2 + 7x) = 24$

(a) $\left\{\frac{4}{3}, -\frac{3}{4}\right\}$ (b) $\left\{-\frac{4}{3}, -\frac{3}{4}\right\}$

(c) $\left\{-\frac{4}{3}, \frac{3}{4}\right\}$ (d) $\left\{\frac{4}{3}, \frac{3}{4}\right\}$

122. Solve $2x + 40 < x$

(a) $x < 40$ (b) $x < 20$

(c) $x < -40$ (d) $x < -20$

123. If a big hog weighs 8 pounds more than a little hog and 3 times the weight of the little hog equals 2 times the weight of the big hog, then find the weight of the little hog.

(a) 10 (b) 24

(c) 16 (d) 8

124. Solve $x^2 - x = 12$

(a) $\{3, -4\}$ (b) $\{3, 4\}$

(c) $\{-3, 4\}$ (d) $\{-3, -4\}$

125. Solve $x^2 - 16 = 6x$

(a) $\{2, -8\}$ (b) $\{2, 8\}$

(c) $\{-2, 8\}$ (d) $\{-2, -8\}$

126. Solve $x(x - 6) = 7$

(a) $\{1, -7\}$ (b) $\{1, 7\}$

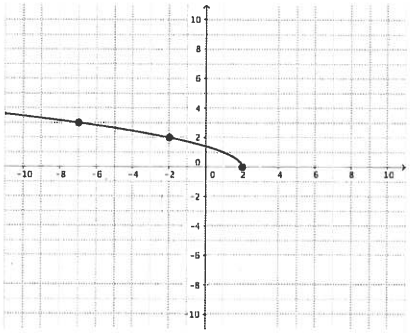
(c) $\{-1, 7\}$ (d) $\{-1, -7\}$

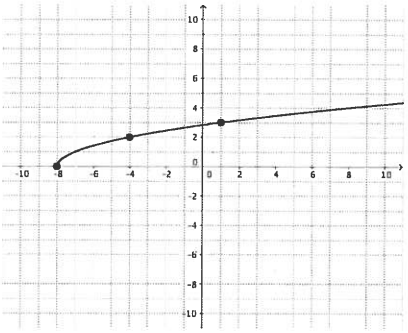
127. Find a common factor for $3y^3 + 2y^2$ and $6y^4 + 4y^3$.

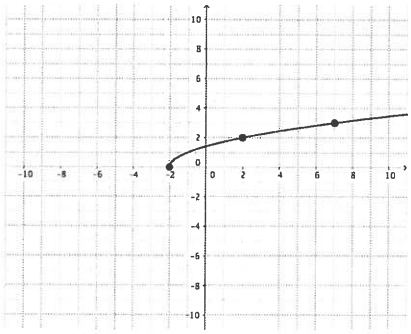
(a) $3y + 5$ (b) $y + 2$

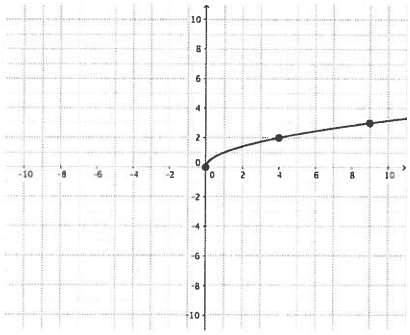
(c) $3y + 2$ (d) $3y + 1$

128. Graph $y = \sqrt{x+2}$

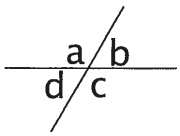
(a) 

(b) 

(c) 

(d) 

129. Find the average of a, b, c, and d.



(a) 45
(b) 60
(c) 90
(d) 180

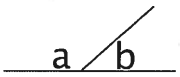
130. For what values is $f(x) = \dfrac{x-1}{x^2-4}$ undefined?

(a) $\{0, 1\}$
(b) $\{1, -1\}$
(c) $\{-2, 2\}$
(d) $\{-4, 4\}$

131. Solve for x and y $\quad \begin{aligned} x + 3y &= 5 \\ 2x - y &= 3 \end{aligned}$

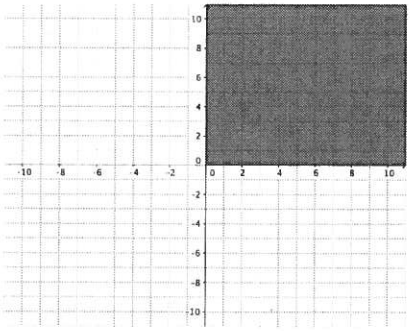
(a) $(x, y) = (2, -1)$
(b) $(x, y) = (-2, 1)$
(c) $(x, y) = (2, 1)$
(d) $(x, y) = (-2, -1)$

132. Find the average of a and b.



(a) 60
(b) 45
(c) 90
(d) 180

133. If point (a, b) is in the shaded area, then



(a) $a < 0$ and $b > 0$

(b) $a > 0$ and $b < 0$

(c) $a > 0$ and $b > 0$

(d) $a < 0$ and $b < 0$

step by step solutions

① Find $f(2)$ if $f(x) = 8000(1.04)^x$

$f(2) = 8000(1.04)^2$

$f(2) = 8000(1.04)(1.04)$

$f(2) = 8000(1.0816)$

$f(2) = 8652.80$

② Find C if $C = \frac{5}{9}(F-32)$, $F = 86$

$C = \frac{5}{9}(86-32)$

$C = \frac{5}{9}(54)$

$C = 5(6)$

$C = 30$

③ Find y if $y = 2x^2 - 4x - 6$, $x = -2$

$y = 2(-2)^2 - 4(-2) - 6$

$y = 2(-2)(-2) - 4(-2) - 6$

$y = 2(4) - 4(-2) - 6$

$y = 8 + 8 - 6$

$y = 16 - 6$

$y = 10$

(4) Evaluate $(x+3)(x+4)$ if $x=-4$

$(-4+3)(-4+4)=$

$(-1)(0)=$

$0=$

(5) Find P if $P=2(L+W)$, $L=6$, $W=2$

$P=2(6+2)$

$P=2(8)$

$P=16$

(6.) Find $f(4)$ if $f(x)=\frac{x+18}{x-3}$

$f(4)=\frac{4+18}{4-3}$

$f(4)=\frac{22}{1}$

$f(4)=22$

(7.) Find C if $C=P+.05P$, $P=30$

$C=30+.05(30)$

$C=30+1.50$

$C=31.50$

(8) Find $h(2)$ if $h(x) = -16x^2 + 32x$

(25)

$h(2) = -16(2)^2 + 32(2)$

$h(2) = -16(2)(2) + 32(2)$

$h(2) = -16(4) + 32(2)$

$h(2) = -64 + 64$

$h(2) = 0$

(9) Find y if $y = 31.95x + 0.10m$, $x = 5$, $m = 200$

$y = 31.95(5) + 0.10(200)$

$y = 159.75 + 20$

$y = 179.75$

(10) Find $Pr - r$ if $P = -9$, $r = \frac{1}{2}$

$(-9)(\frac{1}{2}) - (\frac{1}{2}) =$

$(\frac{-9}{1})(\frac{1}{2}) - (\frac{1}{2}) =$

$\frac{-9}{2} - \frac{1}{2} =$

$\frac{-9-1}{2} =$

$\frac{-10}{2} =$

$-5 =$

(11.) Find y if $y = \sqrt{x+1} + 8$, $x = 0$

$y = \sqrt{0+1} + 8$

$y = \sqrt{1} + 8$

$y = 1 + 8$

$y = 9$

(12.) Find $g(2)$ if $g(x) = \frac{x}{1-x}$

$g(2) = \frac{2}{1-(2)}$

$g(2) = \frac{2}{1-2}$

$g(2) = \frac{2}{-1}$

$g(2) = -2$

(13.) Find $f(-3)$ if $f(x) = |x-2|$

$f(-3) = |-3-2|$

$f(-3) = |-5|$

$f(-3) = 5$

(14.) Find $f(-1)$ if $f(x) = 4x^2$

$f(-1) = 4(-1)^2$

$f(-1) = 4(-1)(-1)$

$f(-1) = 4(1)$

$f(-1) = 4$

(15) Find $f(-1)$ if $f(x) = \frac{x-1}{x^2-9}$

$$f(-1) = \frac{(-1)-1}{(-1)^2-9}$$

$$f(-1) = \frac{-1-1}{(-1)(-1)-9}$$

$$f(-1) = \frac{-2}{1-9}$$

$$f(-1) = \frac{-2}{-8}$$

$$f(-1) = \frac{2}{8}$$

$$f(-1) = \frac{2(1)}{2(4)}$$

$$f(-1) = \frac{1}{4}$$

(16) Find $f(1)$ if $f(x) = (x-1)^2 + 8$

$$f(1) = (1-1)^2 + 8$$

$$f(1) = (0)^2 + 8$$

$$f(1) = (0)(0) + 8$$

$$f(1) = 0 + 8$$

$$f(1) = 8$$

(17) Find 5^{-2}

$5^{-2} =$

$\frac{1}{5^2} =$

$\frac{1}{5 \cdot 5} =$

$\frac{1}{25} =$

(18) Find A if $A = \pi r^2$, $\pi = 3.14$, $r = 4$

$A = \pi r^2$

$A = 3.14(4)^2$

$A = 3.14(4)(4)$

$A = 3.14(16)$

$A = 50.24$

(19) Find $x - y$ if $x = \frac{1}{4}$, $y = -x$

$x - y =$

$x - (-x) =$

$x + x =$

$2x =$

$2\left(\frac{1}{4}\right) =$ Subst

$\frac{2}{1}\left(\frac{1}{4}\right) =$

$\frac{2}{4} =$

$\frac{2(1)}{2(2)} =$

$\frac{1}{2} =$

(20) Find the average of
2800, 1800, 1000, 1400, 2300

$$\begin{array}{r} 2800 \\ 1800 \\ 1000 \\ 1400 \\ +\ 2300 \\ \hline 9300 \end{array}$$

$$5\overline{)9300} \quad 1860$$
$$-(5)$$
$$43$$
$$-(40)$$
$$30$$

(21.) Solve $4x+1=10$

$4x+1-1=10-1$

$4x=9$

$\frac{4x}{4}=\frac{9}{4}$

$x=\frac{9}{4}$

(22) Solve $1+\frac{6}{x}=-23$

$1+\frac{6}{x}=-23$

$1+\frac{6}{x}-1=-23-1$

$\frac{6}{x}=-24$

$\frac{6}{x}=\frac{-24}{1}$

Cross multiply

$6(1)=-24(x)$

$6=-24x$

$\frac{6}{-24}=\frac{-24x}{-24}$

$\frac{6(1)}{6(-4)}=x$

$-\frac{1}{4}=x$

(23.) Find y if $3x+2y=90$, $x=10$

30

$3x+2y=90$

$3(10)+2y=90$

$30+2y=90$

$30+2y-30=90-30$

$2y=60$

$\frac{2y}{2}=\frac{60}{2}$

$y=30$

(24) Solve $\frac{3}{2}x+1=5$

$\frac{3}{2}x+1-1=5-1$

$\frac{3}{2}x=4$

$\frac{3}{2}x=\frac{4}{1}$

$\frac{2}{3}\left(\frac{3x}{2}\right)=\frac{2}{3}\left(\frac{4}{1}\right)$

$x=\frac{8}{3}$

(25.) Solve $7x - 2 = 5 + 3x$

$7x - 2 + 2 = 5 + 3x + 2$

$7x = 3x + 7$

$7x - 3x = 3x + 7 - 3x$

$4x = 7$

$\frac{4x}{4} = \frac{7}{4}$

$x = \frac{7}{4}$

(26) Solve $6x + 12 = 2x$

$6x + 12 - 12 = 2x - 12$

$6x = 2x - 12$

$6x - 2x = 2x - 12 - 2x$

$4x = -12$

$\frac{4x}{4} = \frac{-12}{4}$

$x = -3$

(27) Find C if $K = C + 294$, $K = 10$

$k = c + 294$

$10 = c + 294$

$10 - 294 = c + 294 - 294$

$-284 = c$

(28) Solve $8-x=2(x-8)$

$8-x=2x-16$

$-8 \quad -8$

$x-8=2x-16-8$

$-x=2x-24$

$-x-2x=2x-24-2x$

$-1x-2x=-24$

$-3x=-24$

$\frac{-3x}{-3}=\frac{-24}{-3}$

$x=8$

32

(29) Solve $\frac{x}{9}=\frac{x+1}{10}$

$10(x)=9(x+1)$ Cross Multiply

$10x=9x+9$

$10x-9x=9x+9-9x$

$1x=9$

$x=9$

(30) If $2x+1=4$ find $12x$

$2x+1-1=4-1$

$2x=3$

$\frac{2x}{2}=\frac{3}{2}$

$x=\frac{3}{2}$

$12x=$ Substitute

$12(\frac{3}{2})=$ divide

$6(3)=$

$18=$

(31) Solve $3 = \frac{12-x}{x}$

$\frac{3}{1} = \frac{12-x}{x}$

$3(x) = 1(12-x)$

$3x = 12 - 1x$

$3x + 1x = 12 - 1x + 1x$

$4x = 12$

$\frac{4x}{4} = \frac{12}{4}$

$x = 3$

(32) Find a if $ax - 25 = x + 2$, $x = 3$

$ax - 25 = x + 2$

$a(3) - 25 = (3) + 2$

$3a - 25 = 3 + 2$

$3a - 25 = 5$

$3a - 25 + 25 = 5 + 25$

$3a = 30$

$\frac{3a}{3} = \frac{30}{3}$

$a = 10$

(33) Solve $6(x-2)-20=2x$

$6x-12-20=2x$

$6x-32=2x$

$6x-32+32=2x+32$

$6x=2x+32$

$6x-2x=2x+32-2x$

$4x=32$

$\frac{4x}{4}=\frac{32}{4}$

$x=8$

(34)

(34) Solve $5x=12+2x$

$5x-2x=12+2x-2x$

$3x=12$

$\frac{3x}{3}=\frac{12}{3}$

$x=4$

(35.) Solve $x-8=3x-8$

$x-8+8=3x-8+8$

$x=3x$

$x-3x=3x-3x$

$1x-3x=0$

$-2x=0$

$\frac{-2x}{-2}=\frac{0}{-2}$

$x=0$

(36) Solve $x-8=8-x$

$x-8+8=8-x+8$

$x=-x+16$

$x+x=-x+16+x$

$1x+1x=16$

$2x=16$

$\frac{2x}{2}=\frac{16}{2}$

$x=8$

(37) Solve $3(x)=2(x+8)$

$3x=2x+16$

$3x-2x=2x+16-2x$

$1x=16$

$x=16$

(38) Solve $\frac{2}{5x}+\frac{1}{x}=14$

mult by LCD $\begin{matrix}2\\14\\5\\\hline 70\end{matrix}$

$\frac{2}{5x}(5x)+\frac{1}{x}(5x)=\frac{14}{1}(5x)$

$2(1)+1(5)=14(5x)$

$2+5=70x$

$7=70x$

$\frac{7}{70}=\frac{70x}{70}$

$\frac{7}{70}=x$

$\frac{7(1)}{7(10)}=x$

$\frac{1}{10}=x$

39. If $2x+1=4$ find $x+2$

36

$2x+1-1=4-1$

$2x=3$

$\frac{2x}{2}=\frac{3}{2}$

$x=\frac{3}{2}$

find $x+2=$ Subst

$\frac{3}{2}+2=$

$\frac{3}{2}+\frac{2}{1}=$

$\frac{3}{2}+\frac{2}{1}\left(\frac{2}{2}\right)=$

$\frac{3}{2}+\frac{4}{2}$

$\frac{3+4}{2}=$

$\frac{7}{2}=$

40. If $4x-1=x$ find $3x$

$4x-1+1=x+1$

$4x=x+1$

$4x-x=x+1-x$

$4x-1x=1$

$3x=1$

$\frac{3x}{3}=\frac{1}{3}$

$x=\frac{1}{3}$

find $3x=$

$30\left(\frac{1}{3}\right)=$ Subst

$10(1)=$

$10=$

(41.) Solve $-2x < 8$

$\frac{-2x}{-2} > \frac{8}{-2}$ Turn alligator around

$x > -4$

(42.) Solve $2x < -6$

$\frac{2x}{2} < \frac{-6}{2}$

$x < -3$

(43.) Solve $\frac{x}{4} + \frac{3x}{8} > 20$

LCD = 8 Mult by

$\frac{x}{4}(8) + \frac{3x}{8}(8) > \frac{20}{1}(8)$

$x(2) + 3x(1) > 20(8)$

$2x + 3x > 160$

$5x > 160$

$\frac{5x}{5} > \frac{160}{5}$

$x > 32$

$$5\overline{)160}\quad 32$$
$$-(15)$$
$$10$$
$$-(10)$$
$$0$$

(44) If $xy=k$ and $x=2$ when $y=10$ then find x when $y=5$.

38

$xy = k$

$(2)(10) = k$ subst

$20 = k$

$xy = 20$ (NOW)

$x(5) = 20$ subst

$5x = 20$

$\frac{5x}{5} = \frac{20}{5}$

$x = 4$

(45.) simplify $\left(\frac{12}{x}\right)^2$

$\left(\frac{12}{x}\right)\left(\frac{12}{x}\right) =$

$\frac{144}{x^2} =$

(46.) simplify $\left(\frac{5}{x}\right)^3$

$\left(\frac{5}{x}\right)\left(\frac{5}{x}\right)\left(\frac{5}{x}\right) =$

$\frac{125}{x^3} =$

(47.) Simplify $\left(\frac{6k}{2}\right)^2$

$\left(\frac{6k}{2}\right)^2 =$

$(3k)^2 =$

$(3k)(3k) =$

$9k^2 =$

(48.) Simplify $p - .12p$

$p - .12p =$

$1.00p - .12p =$

$.88p =$

(49) Simplify $(3x-2)(x+5)$

$(3x-2)(x+5) =$

$3x^2 + 15x - 2x - 10 =$

$3x^2 + 13x - 10 =$

(50) Simplify $(2a-b)(2a+b)$

$(2a-b)(2a+b) =$

$4a^2 + 2ab - 2ab - b^2 =$

$4a^2 - b^2 =$

(51) Simplify $(2a-b)^2$

$(2a-b)^2 =$

$(2a-b)(2a-b) =$

$4a^2 - 2ab - 2ab + b^2 =$

$4a^2 - 4ab + b^2 =$

(52.) Simplify $4a^2(ab^2+b^2)$

$4a^2(ab^2+b^2) =$

$4a^2(1a^1b^2+1b^2) =$

$4a^3b^2 + 4a^2b^2 =$

(53.) $(2xy^2)(4x^3y^4) =$

$(2x^1y^2)(4x^3y^4) =$

$8x^{1+3}y^{2+4} =$

$8x^4y^6 =$

(54.) $(2xy^4)^2 =$

$(2^1x^1y^4)^2 =$

$2^{1(2)}x^{1(2)}y^{4(2)} =$

$2^2x^2y^8 =$

$(2)(2)x^2y^8 =$

$4x^2y^8 =$

55. $(3+ax)(2x-1)=$

$6x-3+2ax^2-1ax=$

$6x-3+2ax^2-ax=$

56. Find V if $V=\pi r^2 h$, $r=3a$, $h=2a+3$

$V=\pi r^2 h$

$V=\pi(3a)^2(2a+3)$

$V=\pi(3a)(3a)(2a+3)$

$V=\pi(9a^2)(2a+3)$

$V=\pi(18a^3+27a^2)$

$V=18\pi a^3+27\pi a^2$

57. Find N if $a^2+N+6b^2=(a+b)(a+6b)$

$a^2+N+6b^2=(a+b)(a+6b)$

$=a^2+6ab+ab+6b^2$

$=a^2+6ab+1ab+6b^2$

$=a^2+7ab+6b^2$

$N=7ab$

(58) Find C if $(3x-2)(4x+c)=12x^2+7x-10$

$(3x-2)(4x+c)=12x^2+7x-10$

$-2c=-10$ Last * Last = Last

$\frac{-2c}{-2}=\frac{-10}{-2}$

$c=5$

(59.) Factor GCF $6x^3-18x^2+6x$

$6x^3-18x^2+6x=$

$6x(x^2-3x+1)=$

(60.) Factor GCF, $4x^3y-2x^2y^2$

$4x^3y-2x^2y^2=$

$4x^3y^1-2x^2y^2=$

$2x^2y(2x-1y)=$

$2x^2y(2x-y)=$

(61.) Factor GCF $4y-2$

$4y-2=$

$2(2y-1)=$

(62) If $2x^2 - 4 = m$ then find $x^2 - 2 =$

(43)

$2x^2 - 4 = m$

$\frac{2x^2}{2} - \frac{4}{2} = \frac{m}{2}$

$x^2 - 2 = \frac{m}{2}$ ←

(63) Factor $a^2 - b^2$

$a^2 - b^2 =$

$(a)^2 - (b)^2 =$

$(a+b)(a-b)$

$a^2 - b^2 = (a+b)(a-b)$

(64) Factor $x^2 - 25$

$x^2 - 25 =$

$(x)^2 - (5)^2 =$

$(x+5)(x-5) =$

(65) Factor $x^2 - 25y^2$

$a^2 - b^2 = (a+b)(a-b)$

$x^2 - 25y^2 =$

$(x)^2 - (5y)^2 =$

$(x+5y)(x-5y) =$

(66) Factor $100x^2 - 9y^2$ $a^2-b^2=(a+b)(a-b)$

$100x^2 - 9y^2 =$

$(10x)^2 - (3y)^2 =$

$(10x+3y)(10x-3y) =$

(67) Factor $\frac{x^2}{9} - 64$ $a^2-b^2=(a+b)(a-b)$

$\frac{x^2}{9} - 64 =$

$(\frac{x}{3})^2 - (8)^2 =$

$(\frac{x}{3}+8)(\frac{x}{3}-8) =$

(68) Factor $\frac{x^2}{9} - \frac{y^2}{25}$

$\frac{x^2}{9} - \frac{y^2}{25} =$

$(\frac{x}{3})^2 - (\frac{y}{5})^2 =$

$(\frac{x}{3}+\frac{y}{5})(\frac{x}{3}-\frac{y}{5}) =$

(69) Factor GCF $8x^3+14x^2+12xy$

$8x^3+14x^2+12xy =$

$2x(4x^2+7x+6y) =$

(70) Simplify $\frac{x+x^2}{x}$

$\frac{x+x^2}{x} =$

$\frac{x}{x} + \frac{x^2}{x} =$

$\frac{x}{x} + \frac{x \cdot x}{x} =$

$1 + x =$

(71.) Simplify $\frac{ab+b}{b}$

$\frac{ab+b}{b} =$

$\frac{ab}{b} + \frac{b}{b} =$

$a + 1 =$

(72.) Simplify $\frac{5xy+y}{y}$

$\frac{5xy+y}{y} =$

$\frac{5xy}{y} + \frac{y}{y} =$

$5x + 1 =$

(73) Simplify $\frac{8n+4}{4}$

$\frac{8n+4}{4} =$

$\frac{8n}{4} + \frac{4}{4} =$

$2n+1 =$

(74) Solve $2x(x+5)=0$

$2x(x+5)=0$

$2x=0$ OR $x+5=0$

$\frac{2x}{2} = \frac{0}{2}$ OR $x+5-5=0-5$

$x=0$ OR $x=-5$

(75) Solve $x^2+8x+12=0$

$x^2+8x+12=0$

$(x+2)(x+6)=0$

12.1
6.2
3.4
Possible combos

Let $x+2=0$ OR $x+6=0$

$x+2-2=0-2$ OR $x+6-6=0-6$

$x=-2$ OR $x=-6$

(76) Solve $x^2+6x+8=0$

$(x+2)(x+4)=0$

8.1
2.4
Possible combos

Let $x+2=0$ OR $x+4=0$

$x+2-2=0-2$ OR $x+4-4=0-4$

$x=-2$ OR $x=-4$

(77) Solve $x^2+x-12=0$

$x^2+x-12=0$

$(x-3)(x+4)=0$

Let $x-3=0$ OR $x+4=0$

$x-3+3=0+3$ OR $x+4-4=0-4$

$x=3$ OR $x=-4$

12.1
6.2
3.4
Possible Combos 4?

(78) Solve $x^2-x-2=0$

2.1 Possible Combos

$x^2-x-2=0$

$(x+1)(x-2)=0$

Let $x+1=0$ OR $x-2=0$

$x+1-1=0-1$ OR $x-2+2=0+2$

$x=-1$ OR $x=2$

(79) Solve $x^2-12=x$

$x^2-12=x$

$x^2-12-x=x-x$

$x^2-12-x=0$

$x^2-x-12=0$

$(x+3)(x-4)=0$

Let $x+3=0$ OR $x-4=0$

$x+3-3=0-3$ OR $x-4+4=0+4$

$x=-3$ OR $x=4$

12.1
6.2
3.4
Possible Combos

(80) Solve $x^2 - 6x = -8$

$x^2 - 6x = -8$

$x^2 - 6x + 8 = -8 + 8$

$x^2 - 6x + 8 = 0$

$(x-2)(x-4) = 0$

8.1
2.4
possible combos

Let $x-2=0$ OR $x-4=0$

$x-2+2=0+2$ OR $x-4+4=0+4$

$x=2$ OR $x=4$

(81) Solve $2x^2 + 5x - 12 = 0$

$2x^2 + 5x - 12 = 0$

$(2x-3)(x+4) = 0$

2.1
12.1
6.2
3.4
possible combos

Let $2x-3=0$ OR $x+4=0$

$2x-3+3=0+3$ OR $x+4-4=0-4$

$2x=3$ OR $x=-4$

$\frac{2x}{2} = \frac{3}{2}$ OR

$x = 3/2$ $x=-4$

(82) Solve $3x^2+13x=10$

(3.1) (10.1 2.5) Possibly combos

$3x^2+13x=10$

$3x^2+13x-10=10-10$

$3x^2+13x-10=0$

$(3x-2)(x+5)=0$

Let $3x-2=0$ OR $x+5=0$

$3x-2+2=0+2$ OR $x+5-5=0-5$

$3x=2$ OR $x=-5$

$\frac{3x}{3}=\frac{2}{3}$

$x=\frac{2}{3}$

(83) Solve $2x^2=-7x-3$

(2.1) (3.1)

$2x^2=-7x-3$

$2x^2+7x+3=0$ Rewrite

$(2x+1)(x+3)=0$

Let $2x+1=0$ or $x+3=0$

$2x+1-1=0-1$ or $x+3-3=0-3$

$2x=-1$ or $x=-3$

$\frac{2x}{2}=\frac{-1}{2}$

$x=-\frac{1}{2}$

(84.) Solve $8x^2 - 1 = 7x$

$8x^2 - 1 = 7x$

$8x^2 - 1 - 7x = 7x - 7x$

$8x^2 - 7x - 1 = 0$ rewrite

$(8x + 1)(x - 1) = 0$

8·1
2·4

(1·1)

possible combos

Set $8x + 1 = 0$ or $x - 1 = 0$

$8x + 1 - 1 = 0 - 1$ or $x - 1 + 1 = 0 + 1$

$8x = -1$ or $x = 1$

$\frac{8x}{8} = \frac{-1}{8}$

$x = -\frac{1}{8}$

(85.) Solve $2x^2 + 5x - 3 = 0$ use Quadratic formula

$2x^2 + 5x - 3 = 0$

$a = 2,\ b = 5,\ c = -3$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-(5) \pm \sqrt{(5)^2 - 4(2)(-3)}}{2(2)}$

$x = \frac{-5 \pm \sqrt{25 + 24}}{4}$

$x = \frac{-5 \pm \sqrt{49}}{4}$

$x = \frac{-5 \pm 7}{4}$

$x = \frac{-5 - 7}{4}$ or $x = \frac{-5 + 7}{4}$

$x = \frac{-12}{4}$ or $x = \frac{2}{4}$

$x = -3$ or $x = \frac{2(1)}{2(2)}$

or $x = \frac{1}{2}$

(86.) Solve $x^2+8x+11=0$ Use Quadratic formula (5)

$1x^2+8x+11=0$

$a=1,\ b=8,\ c=11$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-(8)\pm\sqrt{(8)^2-4(1)(11)}}{2(1)}$$

$$x=\frac{-8\pm\sqrt{64-44}}{2}$$

$$x=\frac{-8\pm\sqrt{20}}{2}$$

$$x=\frac{-8\pm\sqrt{4\times5}}{2}$$

$$x=\frac{-8\pm\sqrt{4}\sqrt{5}}{2}$$

$$x=\frac{-8\pm2\sqrt{5}}{2}$$

$$x=\frac{-8}{2}\pm\frac{2\sqrt{5}}{2}$$

$$x=-4\pm\sqrt{5}$$

$x=-4-\sqrt{5}$ OR $x=-4+\sqrt{5}$

Primes 2, 3, 5, 7, ...

2 | 20
2 | 10
5 | 5
1

(87) Solve $x^2 + 2x + 10 = 0$ use Quadratic formula

$1x^2 + 2x + 10 = 0$

$a=1,\ b=2,\ c=10$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(10)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 - 40}}{2}$$

$\sqrt{-1} = i$

$$x = \frac{-2 \pm \sqrt{-36}}{2}$$

$$x = \frac{-2 \pm 6i}{2}$$

$x = -1 \pm 3i$

$x = -1 - 3i$ or $x = -1 + 3i$

(88) Solve $(x-2)^2 = 25$

$\sqrt{(x-2)^2} = \pm\sqrt{25}$

$x-2 = \pm 5$

$x-2 = -5$ or $x-2 = 5$

$x-2+2 = -5+2$ or $x-2+2 = 5+2$

$x = -3$ or $x = 7$

(89) Solve $(x+2)^2 = 7$

$\sqrt{(x+2)^2} = \pm\sqrt{7}$

$x+2 = \pm\sqrt{7}$

$x+2 = -\sqrt{7}$ or $x+2 = \sqrt{7}$

$x+2-2 = -\sqrt{7}-2$ or $x+2-2 = \sqrt{7}-2$

$x = -2-\sqrt{7}$ or $x = -2+\sqrt{7}$

(90) Solve $(x-2)^2 - 5 = 0$

$(x-2)^2 - 5 = 0$

$(x-2)^2 - 5 + 5 = 0 + 5$

$(x-2)^2 = 5$

$\sqrt{(x-2)^2} = \pm\sqrt{5}$

$x-2 = \pm\sqrt{5}$

$x-2 = -\sqrt{5}$ or $x-2 = \sqrt{5}$

$x-2+2 = -\sqrt{5}+2$ or $x-2+2 = \sqrt{5}+2$

$x = 2-\sqrt{5}$ or $x = 2+\sqrt{5}$

(91.) Solve $\sqrt{x+1} = 5$

$(\sqrt{x+1})^2 = (5)^2$

$x+1 = 25$

$x+1-1 = 25-1$

$x = 24$

(92.) Solve $\sqrt{x} + 3 = 10$

$\sqrt{x}+3-3 = 10-3$

$\sqrt{x} = 7$

$(\sqrt{x})^2 = (7)^2$

$x = 49$

(93.) Solve $\frac{3}{x} = \frac{x}{12}$

$3(12) = x(x)$ cross mult

$36 = x^2$

$\pm\sqrt{36} = \sqrt{x^2}$

$\pm 6 = x$

$x = -6$ OR $x = 6$

(94.) Solve $\frac{1}{x} = \frac{x}{5}$

$1(5) = x(x)$ cross mult

$5 = x^2$

$\pm\sqrt{5} = \sqrt{x}$

$\pm\sqrt{5} = x$

$x = -\sqrt{5}$ OR $x = \sqrt{5}$

(95.) Solve $7x^2 = 1$

$$\frac{7x^2}{7} = \frac{1}{7}$$

$$x^2 = \frac{1}{7}$$

$$\sqrt{x^2} = \pm\sqrt{\frac{1}{7}}$$

$$x = \pm\sqrt{\frac{1}{7}}$$

$x = -\sqrt{\frac{1}{7}}$ or $x = \sqrt{\frac{1}{7}}$

(96.) Solve for r, $A = \pi r^2$

$$A = \pi r^2$$

$$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$$

$$\frac{A}{\pi} = r^2$$

$$\pm\sqrt{\frac{A}{\pi}} = \sqrt{r^2}$$

$$\pm\sqrt{\frac{A}{\pi}} = r$$

$r = -\sqrt{\frac{A}{\pi}}$ or $r = \sqrt{\frac{A}{\pi}}$

(97) 

If the area of the square is 100 then find x.

56

$A = Lw$

$100 = (2x)(2x)$

$100 = 4x^2$

$\frac{100}{4} = \frac{4x^2}{4}$

$25 = x^2$

$\pm\sqrt{25} = \sqrt{x^2}$

$\pm 5 = x$

~~$x = -5$~~ or $x = 5$

$x = 5$

(98) $3x + y = 7$

$5x - y = 9$

$8x + 0 = 16$

$8x = 16$

$\frac{8x}{8} = \frac{16}{8}$

$x = 2$

Sub back

$3x + y = 7$

$3(2) + y = 7$

$6 + y = 7$

$6 + y - 6 = 7 - 6$

$y = 1$

$(x, y) = (2, 1)$

(99.) Solve $x+2y=7$
$x-2y=3$

$x+2y=7$
$x-2y=3$

$2x=10$

$\frac{2x}{2}=\frac{10}{2}$

$x=5$

Subst

$x+2y=7$

$5+2y=7$

$5+2y-5=7-5$

$2y=2$

$\frac{2y}{2}=\frac{2}{2}$

$y=1$

$(x, y)=(5, 1)$

(100.) Solve $x-y=20$
$x=3y$

$(3y)-y=20$

$3y-1y=20$

$2y=20$

$\frac{2y}{2}=\frac{20}{2}$

$y=10$

Subst

$x=3y$

$x=3(10)$

$x=30$

$(x, y)=(30, 10)$

(101) Solve $x-2y=4$

$x-2y=5$

50

$(x-2y)(-1)=(4)(-1)$ Mult

$(x-2y)(1)=(5)(1)$

$-x+2y=-4$

$x-2y=5$

$0+0=1$

$0\neq 1$

No Solution

(102.) Graph $y=-2x+8$

$y=-2x+8$

x	y
0	8
1	6

$y=-2(0)+8$

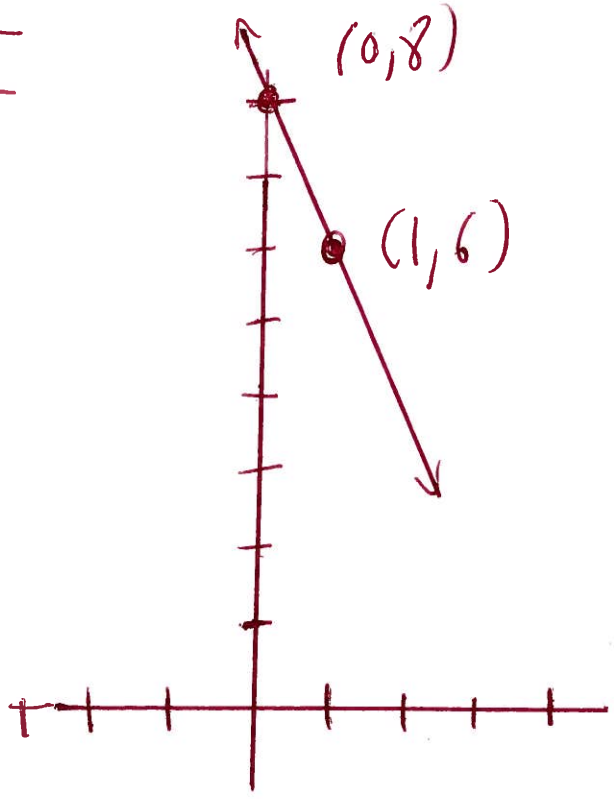
$y=0+8$

$y=8$

$y=-2(1)+8$

$y=-2+8$

$y=6$



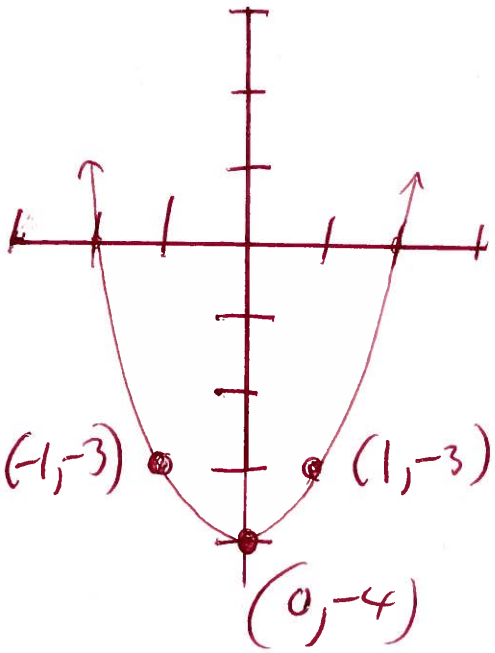
(103) graph $y = x^2 - 4$

x	y
-1	-3
0	-4
1	-3

$y = (-1)^2 - 4$
$y = (-1)(-1) - 4$
$y = 1 - 4$
$y = -3$

$y = (1)^2 - 4$
$y = (1)(1) - 4$
$y = 1 - 4$
$y = -3$

$y = (0)^2 - 4$
$y = (0)(0) - 4$
$y = 0 - 4$
$y = -4$



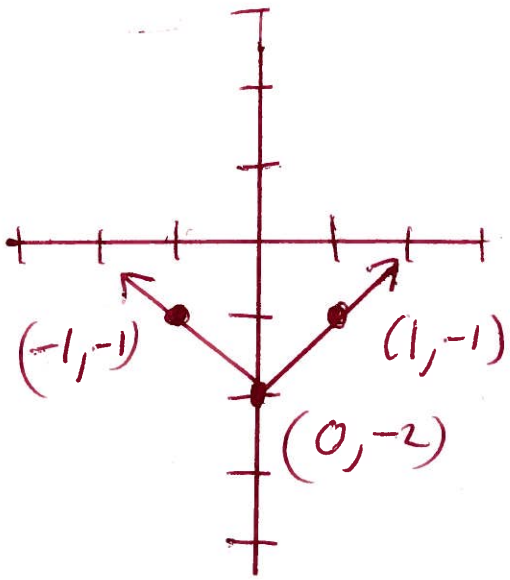
(104) graph $y = |x| - 2$

x	y
-1	-1
0	-2
1	-1

$y = |-1| - 2$
$y = 1 - 2$
$y = -1$

$y = |0| - 2$
$y = 0 - 2$
$y = -2$

$y = |1| - 2$
$y = 1 - 2$
$y = -1$



(105) Simplify $\left(\frac{2x}{3y}\right)\left(\frac{9y}{8x^2}\right)$

Fuctn Fuctn Primes 2, 3, 5, 7, ...

3 | 9
3 | 3
1

$9 = 3 \cdot 3$

2 | 8
2 | 4
2 | 2
1

$8 = 2 \cdot 2 \cdot 2$

$\left(\frac{2x}{3y}\right)\left(\frac{9y}{8x^2}\right) =$

$\frac{2x}{3y} \cdot \frac{3 \cdot 3 \cdot y}{2 \cdot 2 \cdot 2 \cdot x \cdot x} =$

$\frac{3}{4x} =$

(106.) Solve $x^3 + 6x^2 + 8x = 0$

$x^3 + 6x^2 + 8x = 0$

$x(x^2 + 6x + 8) = 0$

$x(x+2)(x+4) = 0$

Set $x = 0$ or $x + 2 = 0$ or $x + 4 = 0$

$x + 2 - 2 = 0 - 2$ or $x + 4 - 4 = 0 - 4$

$x = -2$ or $x = -4$

(107.) Solve $4^3 = 2^k$

$4^3 = 2^k$

$(4)(4)(4) = 2^k$

$64 = 2^k$

$2^6 = 2^k$

$6 = k$

2 | 64
2 | 32
2 | 16
2 | 8
2 | 4
2 | 2
1

(108) If a box has 5 red, 3 green, and 4 blue jelly beans then what is the probability of choosing at random a red jelly bean.

$$\frac{\text{red}}{\text{red+green+blue}} =$$

$$\frac{5}{5+3+4} =$$

$$\frac{5}{12} =$$

(109) If on a map 1 inch equals 10 miles then 30 inches equals how many miles?

$$\frac{1}{10} = \frac{30}{x}$$

$1(x) = 10(30)$ Cross Mult

$1x = 300$

$x = 300$

(10) Find $f(\frac{1}{4})$ if $f(x) = \frac{1}{x} + \frac{3}{x}$

$$f(\tfrac{1}{4}) = \frac{1}{\frac{1}{4}} + \frac{3}{\frac{1}{4}}$$

$$f(\tfrac{1}{4}) = \frac{\frac{1}{1}}{\frac{1}{4}} + \frac{\frac{3}{1}}{\frac{1}{4}}$$

$$f(\tfrac{1}{4}) = \frac{1}{1} \cdot \frac{4}{1} + \frac{3}{1} \cdot \frac{4}{1}$$

$$f(\tfrac{1}{4}) = \frac{4}{1} + \frac{12}{1}$$

$$f(\tfrac{1}{4}) = 4 + 12$$

$$f(\tfrac{1}{4}) = 16$$

(11) Solve for x, $\frac{ax-b}{4a-1} = b$

$$\frac{ax-b}{4a-1} = \frac{b}{1}$$

$1(ax-b) = b(4a-1)$ cross mult

$$ax - b = 4ab - b$$

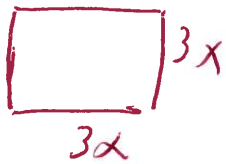
$$ax - b + b = 4ab - b + b$$

$$ax = 4ab$$

$$\frac{ax}{a} = \frac{4ab}{a}$$

$$x = 4b$$

(112) If the side of a square is $3x$ and the area is 900 then find x.



$A = LW$

$9w = (3x)(3x)$

$9w = 9x^2$

$\frac{9w}{9} = \frac{9x^2}{9}$

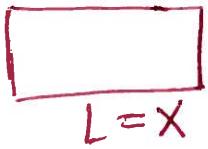
$1w = x^2$

$\pm\sqrt{1w} = \sqrt{x^2}$

$\pm 10 = x$

$x = 10$ or ~~$x = -10$~~

(113) If the perimeter of a rectangle is 160 and the width is 30 then find the area of the rectangle.



$P = 2L + 2W$

$160 = 2L + 2(30)$

$160 = 2L + 60$

$160 - 60 = 2L + 60 - 60$

$100 = 2L$

$\frac{100}{2} = \frac{2L}{2}$

$50 = L$

$W = 30$ and $L = 50$

area $= A = LW$

area $= A = (50)(30)$

area $= A = 1500$

(114.) Find $f(8)$ if $f(x) = \frac{\sqrt{x}}{2}$

Primes 2, 3, 5, 7, ...

$f(8) = \frac{\sqrt{8}}{2}$

$f(8) = \frac{\sqrt{4 \times 2}}{2}$

$f(8) = \frac{\sqrt{4}\sqrt{2}}{2}$

$f(8) = \frac{2\sqrt{2}}{2}$

$f(8) = \sqrt{2}$

2 | 8
2 | 4
2 | 2
1

factor

(115.) Solve $100 = 80 + \frac{x}{2}$

$100 - 80 = 80 + \frac{x}{2} - 80$

$20 = \frac{x}{2}$

$\frac{20}{1} = \frac{x}{2}$

$2(20) = 1(x)$ cross mult

$40 = 1x$

$40 = x$

(116.) Solve $\frac{60x}{20} = 18$

$\frac{60x}{20} = 18$

$3x = 18$ divide

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

(117) Simplify $\frac{a^6 b^7}{a^2 b^9}$

$\frac{a^{6-2}}{b^{9-7}} =$

$\frac{a^4}{b^2} =$

(118) Solve $x+y=9$
$3x+4y=28$

$(x+y=9)\ (-4)$ ← Multiply
$(3x+4y=28)\ (1)$

$-4x-4y=-36$
$3x+4y=28$

$-1x=-8$

$\frac{-1x}{-1} = \frac{-8}{-1}$

$x=8$

Subst $x+y=9$

$(8)+y=9$

$8+y-8=9-8$

$y=1$

$(x,y)=(8,1)$

(119) Solve $x^2+6x-16=0$

$(x-2)(x+8)=0$

16.1
2.8
4 4
possible

Let $x-2=0$ OR $x+8=0$

$x-2+2=0+2$ OR $x+8-8=0-8$

$x=2$ OR $x=-8$

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(120.) Solve $2(x^2-6)=60$

$\frac{2(x^2-6)}{2}=\frac{60}{2}$

$x^2-6=30$

$x^2-6+6=30+6$

$x^2=36$

$\sqrt{x^2}=\pm\sqrt{36}$

$x=\pm 6$

$x=-6$ OR $x=6$.

(121) Solve $2(12x^2+7x)=24$

$\frac{2(12x^2+7x)}{2}=\frac{24}{2}$

$12x^2+7x=12$

$12x^2+7x-12=0$

$(3x+4)(4x-3)=0$

Let $3x+4=0$ OR $4x-3=0$

$3x+4-4=0-4$ OR $4x-3+3=0+3$

12 1 12 4
3 4 3 4
2 6 2 6
possibles

$3x=-4$ OR $4x=3$

$\frac{3x}{3}=\frac{-4}{3}$ OR $\frac{4x}{4}=\frac{3}{4}$

$x=-\frac{4}{3}$ OR $x=\frac{3}{4}$

(122) Solve $2x+40<x$

$2x+40-40<x-40$

$2x<x-40$

$2x-x<x-40-x$

$x<-40$

(123) If a big hog weighs 8 pounds more than a little hog and 3 times the weight of the little hog equals 2 times the weight of the big hog then find the weight of the little hog.

let x = weight of little hog

let $x+8$ = weight of big hog

$3(x)=2(x+8)$

$3x=2x+16$

$3x-2x=2x+16-2x$

$x=16$ little hog

(124) $x^2 - x = 12$

$x^2 - x - 12 = 0$

$(x+3)(x-4) = 0$

12, 1
6, 2
3, 4
possibly

Let $x+3=0$ or $x-4=0$

$x+3-3=0-3$ or $x-4+4=0+4$

$x=-3$ or $x=4$

(125) $x^2 - 16 = 6x$

$x^2 - 6x - 16 = 0$

$(x+2)(x-8) = 0$

16, 1
2, 8
4, 4
possibly

Let $x+2=0$ or $x-8=0$

$x+2-2=0-2$ or $x-8+8=0+8$

$x=-2$ or $x=8$

(126) $x(x-6) = 7$

$x^2 - 6x = 7$

$x^2 - 6x - 7 = 0$

$(x+1)(x-7) = 0$

7, 1
possib

$x+1=0$ or $x-7=0$

$x+1-1=0-1$ or $x-7+7=0+7$

$x=-1$ or $x=7$

(27.) Find a common factor

$3y^3+2y^2$ and $6y^4+4y^3$

$3y^3+2y^2=$

$y^2(3y+2)=$ Factor

$y \cdot y\,(3y+2)$

$6y^4+4y^3=$

$2y^3(3y+2)=$ Factor

$2 \cdot y \cdot y \cdot y\,(3y+2)$

thus $3y+2$ is a common factor

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(28.) graph $y=\sqrt{x+2}$

x	y
-2	0
2	2
7	3

$y=\sqrt{x+2}$

$y=\sqrt{-2+2}$

$y=\sqrt{0}$

$y=0$

$y=\sqrt{x+2}$

$y=\sqrt{2+2}$

$y=\sqrt{4}$

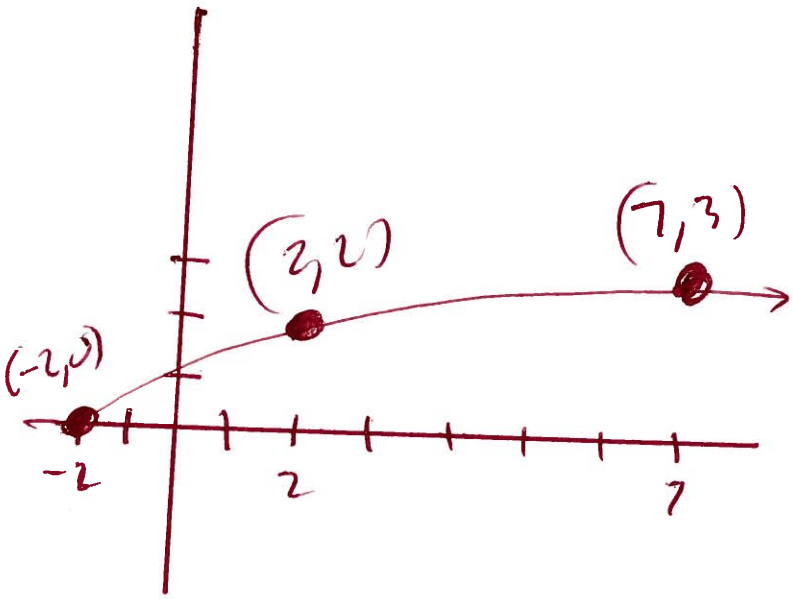
$y=2$

$y=\sqrt{x+2}$

$y=\sqrt{7+2}$

$y=\sqrt{9}$

$y=3$



(129) Find the average of a, b, c, d.

a	b
d	c

$a+b+c+d = 360$

$\frac{a+b+c+d}{4} = \frac{360}{4}$

$\frac{a+b+c+d}{4} = 90$ average

(130) For what value is $f(x) = \frac{x-1}{x^2-4}$ undefined?

formula $a^2-b^2 = (a+b)(a-b)$

Set $x^2-4=0$

$(x)^2-(2)^2=0$

$(x+2)(x-2)=0$

so $x+2=0$ or $x-2=0$

$x+2-2=0-2$ or $x-2+2=0+2$

$x=-2$ or $x=2$

undefined for $\{-2, 2\}$

(131) Solve

$x+3y=5$

$2x-y=3$

$(x+3y=5)(1)$

$(2x-y=3)(3)$

$x+3y=5$

$6x-3y=9$

$7x=14$

$\frac{7x}{7} = \frac{14}{7}$

$x=2$

$x+3y=5$

$2+3y=5$

$2+3y-2=5-2$

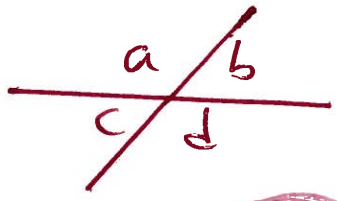
$3y=3$

$\frac{3y}{3} = \frac{3}{3}$

$y=1$

$(x,y)=(2,1)$

(132) Find the average of a and b.



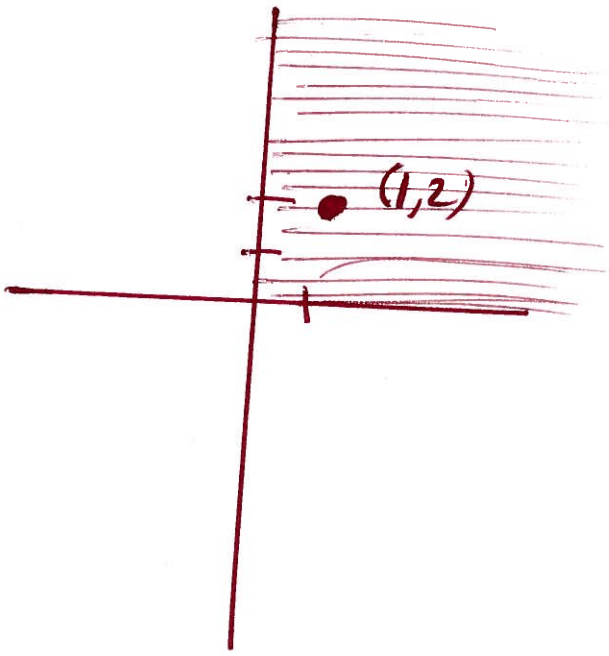
$a+b=180$

$\frac{a+b}{2}=\frac{180}{2}$

$\frac{a+b}{2}=90$ average

(133.) If point (a,b) is in shaded area then

$a>0$ and $b>0$



Example $(1,2)$

$1>0$ and $2>0$