119 Review Question

Multiple Choice
Step by Step Solutions
Math 0310

5-20-14
Elementary Algebra

✓✓✓

①

1. $(-7) - (-20) =$

$-7 + 20 =$

$\boxed{13} =$

2. $-126.01 - 20.98 =$

$\boxed{-146.99} =$

3. $8 + 2(-4 - 1) =$

$8 + 2(-5) =$

$8 - 10 =$

$\boxed{-2} =$

4. $$\frac{1 + 9(-19 - 3 * 4)}{-3^2 + 11} =$$

$$\frac{1 + 9(-19 - 12)}{-(3)(3) + 11} =$$

$$\frac{1 + 9(-31)}{-(9) + 11} =$$

$$\frac{1 - 279}{-9 + 11} =$$

$$\frac{-278}{2} =$$

$\boxed{-139} =$

⑤ Eval if $a=2$, $b=-3$, $c=-7$

$-3a^2 - 3b + c - 14 =$

$-3(2)^2 - 3(-3) + (-7) - 14 =$

$-3(2)(2) - 3(-3) + (-7) - 14 =$

$-3(4) - 3(-3) + (-7) - 14 =$

$-12 + 9 - 7 - 14 =$

$-3 - 7 - 14 =$

$-10 - 14 =$

$\boxed{-24 =}$

⑥ Eval if $a=-7$, $b=3$, $c=14$

$|6a^2 - b^2| + c =$

$|6(-7)^2 - (3)^2| + (14) =$

$|6(-7)(-7) - (3)(3)| + 14 =$

$|6(49) - (9)| + 14 =$

$|294 - 9| + 14 =$

$|285| + 14 =$

$(285 + 14 =$

$285 + 14 =$

$\boxed{299 =}$

7.
$$7x + 6 + 3x - x + 4 =$$
$$7x + 6 + 3x - 1x + 4 =$$
$$\boxed{9x + 10 =}$$

8.
$$-4(9r + 7) + 6(3r + 5) =$$
$$-36r - 28 + 18r + 30 =$$
$$\boxed{-18r + 2 =}$$

9. Graph the point $(2, 1)$
$$\;\;x\;\;y$$

$(2,1)$

10.

1pm
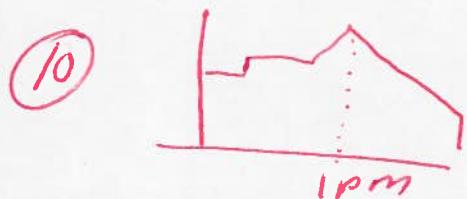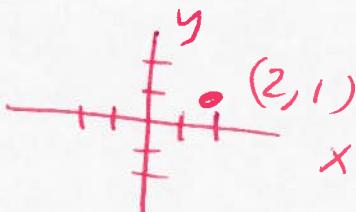
The temperature is highest at 1PM

11.
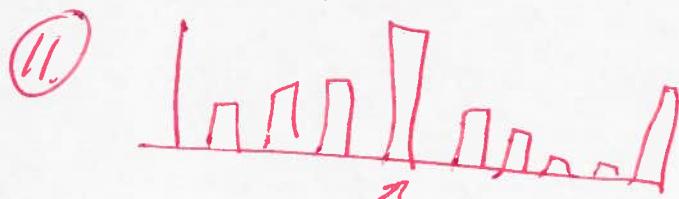
Human Resources has the highest (largest) spending

12.

x , $x+7$, $x+4$

Perimeter $= 50$

$$P = S_1 + S_2 + S_3$$
$$50 = (x) + (x+4) + (x+7)$$
$$50 = x + x + 4 + x + 7$$
$$50 = 3x + 11$$
$$50 - 11 = 3x + 11 - 11$$
$$39 = 3x$$
$$\frac{39}{3} = \frac{3x}{3}$$

$$\boxed{13 = x}$$
$$\boxed{x = 13} \checkmark$$

$$x + 4 = (13) + 4 = \boxed{17} \checkmark$$
$$x + 7 = (13) + 7 = \boxed{20} \checkmark$$
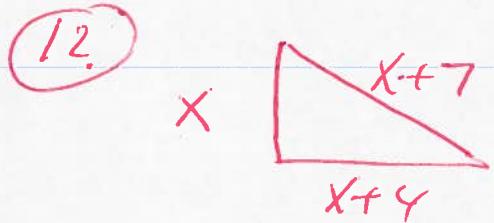
(13) $4(3w+4) = 2(4w+24)$

$12w + 16 = 8w + 48$

$12w + 16 - 16 = 8w + 48 - 16$

$12w = 8w + 32$

$12w - 8w = 8w + 32 - 8w$

$4w = 32$

$\dfrac{4w}{4} = \dfrac{32}{4}$

$w = 8$

(14.) $-7x + 3(2x-4) = -9 - 4x$

$-7x + 6x - 12 = -9 - 4x$

$-1x - 12 = -9 - 4x$

$-1x - 12 + 12 = -9 - 4x + 12$

$-1x = -4x + 3$

$-1x + 4x = -4x + 3 + 4x$

$3x = 3$

$\dfrac{3x}{3} = \dfrac{3}{3}$

$x = 1$

4

15.

$$4.2p - 19 = 5.2p - 7$$
$$4.2p - 19 + 19 = 5.2p - 7 + 19$$
$$4.2p = 5.2p + 12$$
$$4.2p - 5.2p = 5.2p + 12 - 5.2p$$
$$-1p = 12$$
$$\frac{-1p}{-1} = \frac{12}{-1}$$
$$\boxed{P = -12}$$

16.

$$\frac{9x}{10} + \frac{3}{5} = \frac{4x}{5} \qquad \boxed{LCD = 10}$$

$$\frac{9x}{10}(10) + \frac{3}{5}(10) = \frac{4x}{5}(10)$$

$$9x(1) + 3(2) = 4x(2)$$

$$9x + 6 = 8x$$

$$9x + 6 - 6 = 8x - 6$$

$$9x = 8x - 6$$

$$9x - 8x = 8x - 6 - 8x$$

$$\boxed{x = -6}$$

17.

$$-7x + 8 + 5x = -2x + 13 \qquad \boxed{NO\ Solution}$$

$$-2x + 8 = -2x + 13$$

$$-2x + 8 - 8 = -2x + 13 - 8$$

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

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

$$0 \neq 5$$

$$\varnothing$$

$$\{ \}$$

(18)
$$25x + 3(x+1) = 28(x+1) - 25$$
$$25x + 3x + 3 = 28x + 28 - 25$$
$$28x + 3 = 28x + 3$$
$$28x + 3 - 3 = 28x + 3 - 3$$
$$28x = 28x$$
$$28x - 28x = 28x - 28x$$
$$0 = 0$$

all Real #s OR $\{x \mid x \in R\}$

(19) Board
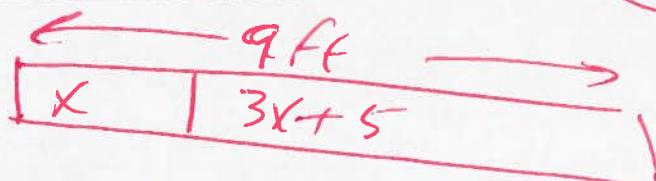
$$(x) + (3x+5) = 9$$
$$x + 3x + 5 = 9$$
$$4x + 5 = 9$$
$$4x + 5 - 5 = 9 - 5$$
$$4x = 4$$
$$\frac{4x}{4} = \frac{4}{4}$$
$$x = 1 \checkmark$$

$$3x + 5 = 3(1) + 5 = 3 + 5 = 8 \checkmark$$

20. Solve for y

$$3x + y = 15$$

$$3x + y - 3x = 15 - 3x$$

$$y = 15 - 3x$$

$$\boxed{y = -3x + 15}$$ rewrite

21. Solve for y

$$15x + 2y = 15$$

$$15x + 2y - 15x = 15 - 15x$$

$$2y = 15 - 15x$$

$$\frac{2y}{2} = \frac{15}{2} - \frac{15x}{2}$$

$$y = \frac{15}{2} - \frac{15}{2}x$$

$$\boxed{y = -\frac{15x}{2} + \frac{15}{2}}$$

22. $A = P(1 + rt)$ Solve for t

$$A = P + Prt$$

$$A - P = P + Prt - P$$

$$A - P = Prt$$

$$\frac{A - P}{Pr} = \frac{Prt}{Pr}$$

$$\boxed{\frac{A - P}{Pr} = t}$$

(23) $A = \frac{1}{2}h(a+b)$ Solve for a

$2A = 2(\frac{1}{2})h(a+b)$ $\boxed{LCD = 2}$

$2A = 1 \, h(a+b)$

$2A = ha + hb$

$2A - hb = ha + hb - hb$

$2A - hb = ha$

$\dfrac{2A - hb}{h} = \dfrac{ha}{h}$

$\boxed{\dfrac{2A - hb}{h} = a}$ OR $\dfrac{2A}{h} - \dfrac{hb}{h} = a$

OR $\dfrac{2A}{h} - b = a$

(24) $S = 2\pi r h + 2\pi r^2$ Solve for h

$S - 2\pi r^2 = 2\pi r h + 2\pi r^2 - 2\pi r^2$

$S - 2\pi r^2 = 2\pi r h$

$\dfrac{S - 2\pi r^2}{2\pi r} = \dfrac{2\pi r h}{2\pi r}$

$\boxed{\dfrac{S - 2\pi r^2}{2\pi r} = h}$

25.

$7x > 28$

$\dfrac{7x}{7} > \dfrac{28}{7}$

$\boxed{x > 4}$

$(4, +\infty)$

26.

$-7x \geq 21$

$\dfrac{-7x}{-7} \leq \dfrac{21}{-7}$ Turn the alligator around

$\boxed{x \leq -3}$

$(-\infty, -3]$

27.

$36 - 6x \geq -6$

$36 - 6x - 36 \geq -6 - 36$

$-6x \geq -42$

$\dfrac{-6x}{-6} \leq \dfrac{-42}{-6}$ Turn the alligator around

$\boxed{x \leq 7}$

$(-\infty, 7]$

(28) Determine if the ordered pair is a solution to the equation $(0, 7)$ $10x - 8y = 56$
$$\underset{x}{0}, \underset{y}{7}$$

$10(0) - 8(7) = 56$?

$0 - 56 = 56$?

$-56 \neq 56$ $\boxed{NO}$

(29) Determine if the ordered pair is a solution to the equation $(2, 0)$ $6y + 4x = 8$
$$\underset{x}{2}, \underset{y}{0}$$

$6(0) + 4(2) = 8$?

$0 + 8 = 8$?

$8 = 8$ $\boxed{YES}$

(30) Graph $2x + 4y = 8$

$2x + 4y - 2x = 8 - 2x$ $\boxed{\text{Solve for } y \text{ first}}$

$4y = 8 - 2x$

$\dfrac{4y}{4} = \dfrac{8}{4} - \dfrac{2x}{4}$

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

$\boxed{y = -\frac{1}{2}x + 2}$

| x	y
0	2
2	1

$y = -\frac{1}{2}(0) + 2$

$y = 0 + 2$

$y = 2$

$y = -\frac{1}{2}(2) + 2$

$y = -1 + 2$

$y = 1$

$(0, 2)$

$(2, 1)$
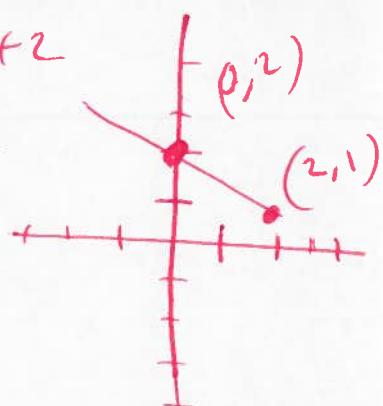
(31) Graph $y = 2x - 2$

$$y = 2(0) - 2$$
$$y = 0 - 2$$
$$y = -2$$
_____
$$y = 2(1) - 2$$
$$y = 2 - 2$$
$$y = 0$$

x	y
0	-2
1	0

(1, 0)

(0, -2)

11.
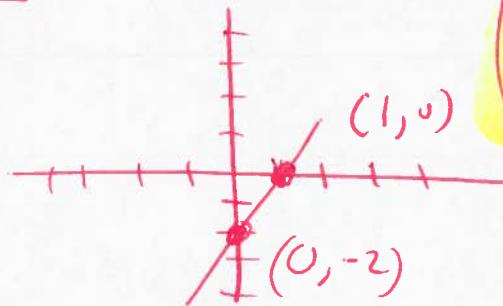
(32) Find the slope of the straight line through the two points $(8, 3)$ and $(-4, 4)$.

$\underset{x_1 \; y_1}{(8, 3)}$ and $\underset{x_2 \; y_2}{(-4, 4)}$

$$M = \frac{y_1 - y_2}{x_1 - x_2}$$

$$M = \frac{(3) - (4)}{(8) - (-4)}$$

$$M = \frac{3 - 4}{8 + 4}$$

$$M = \frac{-1}{12}$$

(33) Find the slope and the y-intercept by using the slope-intercept form $y = mx + b$

$$y = 4x - 5$$

slope $M = 4$ y intercept $= (0, -5)$

(34) Find the slope and the y-intercept by using the slope-intercept form m $(y = mx + b)$

$2x - 3y = -8$

$2x - 3y - 2x = -8 - 2x$

$-3y = -8 - 2x$

$\dfrac{-3y}{-3} = \dfrac{-8}{-3} - \dfrac{2x}{-3}$

$y = \dfrac{8}{3} + \dfrac{2}{3}x$

$y = \dfrac{2}{3}x - \dfrac{8}{3}$

Slope $\boxed{m = \dfrac{2}{3}}$ $\boxed{\text{y-intercept } (0, -\dfrac{8}{3})}$

(35) Find the equation of the line with slope $m = 3$ and point $(-3, 6)$

$\underset{x_1 \quad y_1}{}$

$\boxed{y - y_1 = m(x - x_1)}$ Point Slope formula

$y - (6) = 3(x - (-3))$

$y - 6 = 3(x + 3)$

$y - 6 = 3x + 9$

$y - \cancel{6} + 6 = 3x + 9 + 6$

$\boxed{y = 3x + 15}$

(36) Determine if lines are parallel, perpendicular or neither

$y = 6x - 8$

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

$m_1 = 6$

$m_2 = -\frac{1}{6}$

$m_1 \cdot m_2 = (6)\left(-\frac{1}{6}\right) = \frac{-6}{6} = -1$

Perpendicular

13

(37.) Determine if lines are parallel, perpendicular OR neither

$y = 9x - 6$

$y = 9x + 4$

$m_1 = 9$

$m_2 = 9$

$m_1 = m_2$

Parallel

(38) Determine if lines are parallel, perpendicular or neither

$y = 5x - 4$

$y = -5x - 8$

$m_1 = 5$

$m_2 = -5$

$m_1 m_2 = (5)(-5) = -2?$

NOT perpendicular

$m_1 = 5 \neq -5 = m_2$

NOT Parallel

Neither

(39) Determine if lines are parallel, perpendicular OR neither.

$$3x - 8y = -6$$
$$32x + 12y = 8$$

(14)

$$3x - 8y = -6$$
$$3x - 8y - 3x = -6 - 3x$$
$$-8y = -6 - 3x$$
$$\frac{-8y}{-8} = \frac{-6}{-8} - \frac{3x}{-8}$$
$$y = \frac{3}{4} + \frac{3}{8}x$$
$$\boxed{y = \frac{3}{8}x + \frac{3}{4}}$$

$$32x + 12y = 8$$
$$32x + 12y - 32x = 8 - 32x$$
$$12y = 8 - 32x$$
$$\frac{12y}{12} = \frac{8}{12} - \frac{32}{12}x$$
$$y = \frac{2}{3} - \frac{8}{3}x$$
$$\boxed{y = -\frac{8}{3}x + \frac{2}{3}}$$

$$m_1 = \frac{3}{8} \quad \text{and} \quad m_2 = \frac{-8}{3}$$

$$m_1 \cdot m_2 = \left(\frac{3}{8}\right)\left(\frac{-8}{3}\right) = \frac{-24}{24} = -1$$

$$\boxed{Perpendicular}$$

(40) Graph
$h(x) = -3x - 5$

$h(0) = -3(0) - 5$
$h(0) = 0 - 5$
$h(0) = -5$

$h(1) = -3(1) - 5$
$h(1) = -3 - 5$
$h(1) = -8$

x	h(x)
0	-5
1	-8

15.

$(0, -5)$

$(1, -8)$
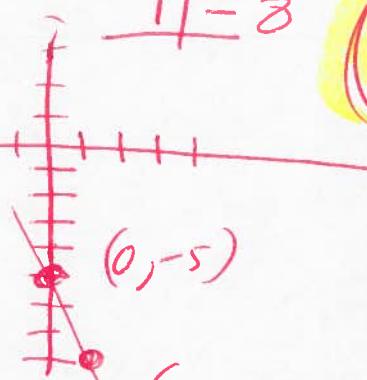
(41) Graph
$f(x) = \frac{1}{2}x + 3$

$f(0) = \frac{1}{2}(0) + 3$
$f(0) = 0 + 3$
$f(0) = 3$

$f(2) = \frac{1}{2}(2) + 3$
$f(2) = 1 + 3$
$f(2) = 4$

x	f(x)
0	3
2	4

$(0, 3)$ $(2, 4)$
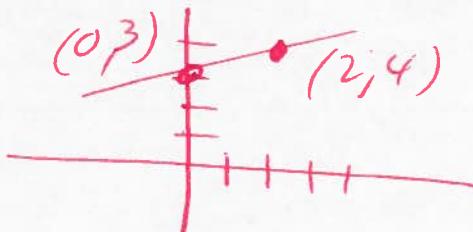
(42) $g(x) = 8x + 3$

$g(a) = 8(a) + 3$
$g(a) = 8a + 3$ OR $(a, \quad 8a + 3)$

(43) $f(x) = 5x^2 + 4x + 2$

$f(-4) = 5(-4)^2 + 4(-4) + 2$
$f(-4) = 5(-4)(-4) + 4(-4) + 2$
$f(-4) = 5(16) + 4(-4) + 2$
$f(-4) = 80 - 16 + 2$
$f(-4) = 64 + 2$
$f(-4) = 66$

$(-4, 66)$

(44) $f(x) = |x - 7|$

$f(-9) = |(-9) - 7|$

$f(-9) = |-9 - 7|$

$f(-9) = |-16|$

$f(-9) = 16$ OR $(-9, 16)$

(45) $h(x) = \dfrac{x^2 - 4}{x}$

$h(-4) = \dfrac{(-4)^2 - 4}{(-4)}$

$h(-4) = \dfrac{(-4)(-4) - 4}{(-4)}$

$h(-4) = \dfrac{16 - 4}{-4}$

$h(-4) = \dfrac{12}{-4}$

$h(-4) = -3$ OR $(-4, -3)$

46) $2x + y = 5$
$4x + 3y = 7$

$(2x + y = 5)(-3)$
$(4x + 3y = 7)(1)$

$-6x - 3y = -15$
$4x + 3y = 7$

$-2x = -8$

$\dfrac{-2x}{-2} = \dfrac{-8}{-2}$ Subs

$\boxed{x = 4}$

$\rightarrow 2x + y = 5$
$2(4) + y = 5$
$8 + y = 5$
$8 + y - 8 = 5 - 8$
$\boxed{y = -3}$

$\boxed{(x, y) = (4, -3)}$

47) $-x + 3y = 11$
$3x + 4y = 6$

$(-x + 3y = 11)(-4)$
$(3x + 4y = 6)(3)$

$4x - 12y = -44$
$9x + 12y = 18$

$13x = -26$

$\dfrac{13x}{13} = \dfrac{-26}{13}$

$\boxed{x = -2}$ Subst

$-x + 3y = 11$
$-(-2) + 3y = 11$
$2 + 3y = 11$
$2 + 3y - 2 = 11 - 2$
$3y = 9$
$\dfrac{3y}{3} = \dfrac{9}{3}$
$\boxed{y = 3}$

$\boxed{(x, y) = (-2, 3)}$

(48.) $\begin{pmatrix} 3x+5y=19 \\ 6x+10y=29 \end{pmatrix}$ (-10)
(5)

$-30x-50y=-190$
$30x+50y=145$

$0+0=-45$
$0 \neq -45$

No Solution

$\{ \}, \emptyset$

(49.) $\begin{pmatrix} 3x+2y=13 \\ -6x-4y=-26 \end{pmatrix}$ (4)
(2)

$12x+8y=52$
$-12x-8y=-52$

$0+0=0$
$0=0$

infinite # of solutions

$\{(x,y) \mid 3x+2y=13\}$

OR

$\{(x,y) \mid -6x-4y=-26\}$

(50) Find two integers whose sum is -10
and whose difference is 6

$x+y=-10$
$x-y=6$

$2x=-4$

$\dfrac{2x}{2}=\dfrac{-4}{2}$

$x=-2$

Subs

$x+y=-10$
$(-2)+y=-10$
$-2+y=-10$
$-2+y+2=-10+2$
$y=-8$

$(x,y)=$
$(-2,-8)$

(51) Find two numbers such that the first is four more than the second and two times the first is 2 more than four times the second.

$$x = y + 4$$
$$2x = 4y + 2$$

$$x - y = 4$$
$$2x - 4y = 2$$

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

$$-4x + 4y = -16$$
$$2x - 4y = 2$$

$$-2x = -14$$

$$\frac{-2x}{-2} = \frac{-14}{-2}$$

$$\boxed{x = 7}$$

Subst

$$x = y + 4$$
$$7 = y + 4$$
$$7 - 4 = y + 4 - 4$$
$$3 = y$$

$$\boxed{(x, y) = (7, 3)}$$

19.

(52) Raleigh has 63 dimes and nickels. The total value of the coins is $5.20. Find the number of each type of coin.

$$x + y = 63$$
$$.10x + .05y = 5.20$$

$$(x + y = 63)(-.05)$$
$$(.10x + .05y = 5.20)(1)$$
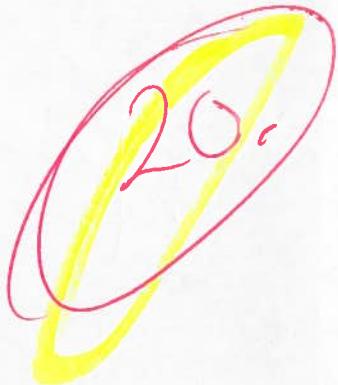
$$-.05x - .05y = -3.15$$
$$.10x + .05y = 5.20$$

$$.05x = 2.05$$

$$\frac{.05x}{.05} = \frac{2.05}{.05}$$

$$\boxed{x = 41} \quad \text{~~nickels~~ dimes}$$

Subst

$$x + y = 63$$
$$41 + y = 63$$
$$41 + y - 41 = 63 - 41$$
$$\boxed{y = 22} \quad \text{~~nickels~~}$$

$$\left(\underset{\text{dimes}}{x}, \underset{\text{nickels}}{y}\right)$$

$$(41, 22)$$

20.

(53) $\left(4x^8y^{-6}z\right)^{-2} =$

$\left(4^1 x^8 y^{-6} z^1\right)^{-2} =$

$4^{-2} x^{-16} y^{12} z^{-2} =$

$\dfrac{y^{12}}{4^2 x^{16} z^2} =$

$\dfrac{y^{12}}{16 x^{16} z^2} =$

(54) $\left(\dfrac{5x^4 y^5}{7z^{10}}\right)^2 =$

$\left(\dfrac{5^1 x^4 y^5}{7^1 z^{10}}\right)^2 =$

$\dfrac{5^2 x^8 y^{10}}{7^2 z^{20}} =$

$\dfrac{25 x^8 y^{10}}{49 z^{20}} =$

21

55)

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

$$\left(\frac{2^1 x^3 y^{-3}}{x^{-5} y^3}\right)^{-2} =$$

$$\frac{2^{-2} x^{-6} y^6}{x^{10} y^{-6}} =$$

$$\frac{y^6 \cdot y^6}{2^2 x^6 x^{10}} =$$

$$\boxed{\frac{y^{12}}{4 x^{16}}} =$$

56)

$$(10z - 10) + (z^2 - z + 2) =$$

$$10z - 10 + z^2 - z + 2 =$$

$$\boxed{z^2 + 9z - 8} =$$

57)

$$(8x^2 - 5x + 20) - (3x^2 + 5x - 40) =$$

$$8x^2 - 5x + 20 - 3x^2 - 5x + 40 =$$

$$\boxed{5x^2 - 10x + 60} =$$

22

58. $(6x^4 - 5x^2 + x) - (9x^3 + 4x^2 + 8x) + (3x^2 - x) =$

$6x^4 - 5x^2 + x - 9x^3 - 4x^2 - 8x + 3x^2 - x =$

$6x^4 - 9x^3 - 6x^2 - 8x =$

23

59. Eval if $x = -2$

$-2x^3 - 5x^2 - x - 46 =$

$-2(-2)^3 - 5(-2)^2 - (-2) - 46 =$

$-2(-2)(-2)(-2) - 5(-2)(-2) - (-2) - 46 =$

$-2(-8) - 5(4) - (-2) - 46 =$

$16 - 20 + 2 - 46 =$

$-4 + 2 - 46 =$

$-2 - 46 =$

$-48 =$

60. Eval if $x = 2$

$P(x) = -4x^2 + 5x + 2$

$P(2) = -4(2)^2 + 5(2) + 2$

$P(2) = -4(2)(2) + 5(2) + 2$

$P(2) = -4(4) + 5(2) + 2$

$P(2) = -16 + 10 + 2$

$P(2) = -6 + 2$

$P(2) = -4$ OR $(2, -4)$

61. $(z+4)(z+9) =$

$z^2 + 9z + 4z + 36 =$

$z^2 + 13z + 36 =$

62. $(x+1)(x^2-x+1) =$

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

$x^3 + 1 =$

63. $(7b+3)^2 =$

$(7b+3)(7b+3) =$

$49b^2 + 21b + 21b + 9 =$

$49b^2 + 42b + 9 =$

64. $(4x-11y)^2 =$

$(4x-11y)(4x-11y) =$

$16x^2 - 44xy - 44xy + 121y^2 =$

$16x^2 - 88xy + 121y^2 =$

65. $(10a+3b)(10a-3b) =$

$100a^2 - 30ab + 30ab - 9b^2 =$

$100a^2 - 9b^2 =$

24.

(66) $\dfrac{19 x^7 y^7 z^3}{76 x^5 y^9} =$

$\dfrac{1 \, x^{7-5} z^3}{4 \, y^{9-7}} =$

$\dfrac{x^2 z^3}{4 y^2} =$

(67.) $(6x^2 - 25x - 13) \div (x - 5)$

$6x + 5 + \dfrac{12}{x-5}$

$x - 5 \overline{\smash{\big)}\ 6x^2 - 25x - 13}$

$\underline{-\ (6x^2 \oplus 30x)}$

$ 5x - 13$

$ = \underline{(5x \ominus 25)}$

$ 12 \ \text{Rem}$

use Long division

OR

$(6x^2 - 25x - 13) \div (x - 5)$

use Synthetic division

$5 \rfloor \ \ 6 \quad\ -25 \quad\quad -13$

$ 30 \quad\quad\ 25$

$ \overline{}$

$ 6 \quad\quad 5 \quad\quad (12) \ \text{rem}$

$6x + 5 + \dfrac{12}{x-5} =$

68. $m^3 n^2 - m^2 n^4 =$ Factor out GCF

26.

$m^2 n^2 (m^1 - n^2) =$

69. $5x(3x+4) - 4(3x+4)$ Factor out GCF

$(3x+4)(5x-4) =$

70. $t(2-m) + s^t(2-m) =$ Factor out GCF

$(2-m)(t+s^t) =$

71. $x^2 + 4x + xy + 4y =$ Factor by grouping

$(x^2 + 4x) + (xy + 4y) =$

$x(x+4) + y(x+4) =$

$(x+4)(x+y) =$

72. $r^2 - 8r + rt - 8t =$ Factor by grouping

$(r^2 - 8r) + (rt - 8t) =$

$r(r-8) + t(r-8) =$

$(r-8)(r+t) =$

73. $36k^2 - 169m^2 =$ Factor $a^2 - b^2 = (a+b)(a-b)$

$(6k)^2 - (13m)^2 =$

$(6k + 13m)(6k - 13m) =$

74 $64x^3 - 27 =$ Factor

$$A^3 - B^3 = (A-B)(A^2 + AB + B^2)$$

$$(4x)^3 - (3)^3 =$$

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

$$(4x-3)(16x^2 + 12x + 9) =$$

27.

75. $27a^3 + 64b^3 =$ Factor

$$A^3 + B^3 = (A+B)(A^2 - AB + B^2)$$

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

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

$$(3a+4b)(9a^2 - 12ab + 16b^2) =$$

76. $3x^2 - 27 =$ Factor $\quad a^2 - b^2 = (a+b)(a-b)$

$$3(x^2 - 9) = \quad \text{Factor GCF}$$

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

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

77 $4x^2 + 12x + 9 =$ Factor

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

78. $15z^2 - 14z - 8 =$ Factor

$$(3z-4)(5z+2) =$$

(79) $2x^2 - 19x + 35 =$ Factor

$(2x - 5)(x - 7) =$

(80.) $27x^2 - 117x - 90 =$ Factor

$9(3x^2 - 13x - 10) =$

$9(3x + 2)(x - 5) =$

(81.) $4x^2 - 4x - 24 =$ Factor

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

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

(82.) $2x^3 + 2x^2 - 12x =$ Factor

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

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

(83) $3(x - 2) - a(x - 2) =$ Factor

$(x - 2)(3 - a) =$

(84.) $18s^7 t^3 + 6s^5 t^4 =$ Factor

$6s^5 t^3(3s^2 + t^1) =$

28.

(85) $9x^5y^2 - 25x^3y^2 =$

$x^3y^2(9x^2 - 25) =$ $\boxed{a^2 - b^2 = (a+b)(a-b)}$

$x^3y^2((3x)^2 - (5)^2) =$ **29.**

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

(86.) $16m^3 - 250 =$ $\boxed{A^3 - B^3 = (A-B)(A^2 + AB + B^2)}$

$2(8m^3 - 125) =$

$2((2m)^3 - (5)^3) =$

$2(2m-5)((2m)^2 + (2m)(5) + (5)^2) =$

$2(2m-5)(4m^2 + 10m + 25) =$

(87.) $x^2 - 7x - 18 =$ Factor

$(x+2)(x-9) =$

(88.) $2x^2 + 4x - 30 =$ Factor

$2(x^2 + 2x - 15) =$

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

(89) $ya - 8a + 7y - 56 =$ Factor by grouping

$(ya - 8a) + (7y - 56) =$

$a(y-8) + 7(y-8) =$

$(y-8)(a+7) =$

(90) $(x-3)(x+2)=0$ Solve

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

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

$\boxed{x=3}$ OR $\boxed{x=-2}$

(91) $(2y+15)(5y+6)=0$ Solve

$2y+15=0$ OR $5y+6=0$

$2y+15-15=0-15$ OR $5y+6-6=0-6$

$2y=-15$ OR $5y=-6$

$\dfrac{2y}{2}=\dfrac{-15}{2}$ OR $\dfrac{5y}{5}=\dfrac{-6}{5}$

$\boxed{y=\dfrac{-15}{2}}$ OR $\boxed{y=\dfrac{-6}{5}}$

(92) $5b(b+13)=0$ Solve

$5b=0$ OR $b+13=0$

$\dfrac{5b}{5}=\dfrac{0}{5}$ OR $b+13-13=0-13$

$\boxed{b=0}$ OR $\boxed{b=-13}$

(93) $42n^2+91n=0$ Solve

$7n(6n+13)=0$

$7n=0$ OR $6n+13=0$

$\dfrac{7n}{7}=\dfrac{0}{7}$ OR $6n+13-13=0-13$

        OR $6n=-13$

$\boxed{n=0}$ OR $\dfrac{6n}{6}=\dfrac{-13}{6}$ $\boxed{n=\dfrac{-13}{6}}$

30.

94) $x^2 - 10x + 25 = 0$

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

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

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

$\boxed{x = 5}$ OR $\boxed{x = 5}$

95) $y^2 - 121 = 0$

$\boxed{a^2 - b^2 = (a+b)(a-b)}$

$(y)^2 - (11)^2 = 0$

$(y + 11)(y - 11) = 0$

$y + 11 = 0$ OR $y - 11 = 0$

$y + 11 - 11 = 0 - 11$ OR $y - 11 + 11 = 0 + 11$

$\boxed{y = -11}$ OR $\boxed{y = 11}$

96) $x^2 - x = 20$

$x^2 - x - 20 = 0$

$(x + 4)(x - 5) = 0$

$x + 4 = 0$ OR $x - 5 = 0$

$x + 4 - 4 = 0 - 4$ OR $x - 5 + 5 = 0 + 5$

$\boxed{x = -4}$ OR $\boxed{x = 5}$

97) $6b^2 + 25b + 5 = -20$

$6b^2 + 25b + 5 + 20 = 0$

$6b^2 + 25b + 25 = 0$

$(2b + 5)(3b + 5) = 0$

$2b + 5 = 0$ OR $3b + 5 = 0$

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

$2b = -5$ OR $3b = -5$

$\dfrac{2b}{2} = \dfrac{-5}{2}$ OR $\dfrac{3b}{3} = \dfrac{-5}{3}$

$\boxed{b = \dfrac{-5}{2}}$ OR $\boxed{b = \dfrac{-5}{3}}$

31

(98.) $x(x-8)=20$

$x^2-8x=20$

$x^2-8x-20=0$

$(x+2)(x-10)=0$

$x+2=0$ OR $x-10=0$

$x+2-2=0-2$ OR $x-10+10=0+10$

$\boxed{x=-2}$ OR $\boxed{x=10}$

(99.) $x^2=256$

$x^2-256=0$

$(x)^2-(16)^2=0$

$(x+16)(x-16)=0$

$x+16=0$ OR $x-16=0$

$x+16-16=0-16$ OR $x-16+16=0+16$

$\boxed{x=-16}$ OR $\boxed{x=16}$

(100.) $t^2+4=-4t$

$t^2+4+4t=-4t+4t$

$t^2+4t+4=0$

$(t+2)(t+2)=0$

$t+2=0$ OR $t+2=0$

$t+2-2=0-2$ OR $t+2-2=0-2$

$\boxed{t=-2}$ OR $\boxed{t=-2}$

(101) $P(x) = x^2 - 2x + 4$

$P(1) = (1)^2 - 2(1) + 4$

$P(1) = (1)(1) - 2(1) + 4$

$P(1) = 1 - 2 + 4$

$P(1) = -1 + 4$

$\boxed{P(1) = 3}$ OR $\boxed{(1, 3)}$

(102) $P(x) = -5x^2 + 4x - 10$

$P(-1) = -5(-1)^2 + 4(-1) - 10$

$P(-1) = -5(-1)(-1) + 4(-1) - 10$

$P(-1) = -5(1) + 4(-1) - 10$

$P(-1) = -5 - 4 - 10$

$P(-1) = -9 - 10$

$\boxed{P(-1) = -19}$ OR $\boxed{(-1, -19)}$

(103) $\dfrac{(y+8)(y-5)}{(y-5)(y+9)} =$ Simplify

$\boxed{\dfrac{y+8}{y+9}} =$

(104) $\dfrac{3x-15}{x^2-25} =$

$\dfrac{3x-15}{(x)^2-(5)^2} =$

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

$\boxed{\dfrac{3}{x+5}} =$

33.

105. $\dfrac{y^2 + 3y - 28}{y^2 + 16y + 63} =$

$\dfrac{(y-4)(y+7)}{(y+7)(y+9)} =$

$\boxed{\dfrac{y-4}{y+9}} =$

106. $\dfrac{y^2 - 10y + 25}{25 - y^2} =$

$\dfrac{(y-5)(y-5)}{(5)^2 - (y)^2} =$

$\dfrac{(y-5)(y-5)}{(5+y)(5-y)} =$

$\dfrac{(y-5)(y-5)}{(y+5)(-1)(y-5)} =$

$\dfrac{y-5}{(-1)(y+5)} =$

$\dfrac{-1(y-5)}{y+5} =$

$\boxed{\dfrac{-y+5}{y+5}} =$

107. $\dfrac{a^2-4b^2}{20ab^2} \cdot \dfrac{4a^2b}{a-2b} =$

$\dfrac{(a)^2-(2b)^2}{20ab^2} \cdot \dfrac{4a^2b}{(a-2b)} =$

$\dfrac{(a+2b)(a-2b)}{20ab^2} \cdot \dfrac{4a^2b}{(a-2b)} =$

$\dfrac{(a+2b)}{20a^1b^2} \cdot \dfrac{4a^2b}{1} =$

$\dfrac{(a+2b)}{5b} \cdot \dfrac{a}{1} =$

$\dfrac{(a+2b)(a)}{5b} =$

$\boxed{\dfrac{a^2+2ab}{5b}} =$

108. $\dfrac{m^2-16}{m^2+3m-28} \div \dfrac{m^2-3m-28}{m-4} =$

$\dfrac{m^2-16}{m^2+3m-28} \cdot \dfrac{m-4}{m^2-3m-28} =$

$\dfrac{(m+4)(m-4)}{(m-4)(m+7)} \cdot \dfrac{(m-4)}{(m+4)(m-7)} =$

$\boxed{\dfrac{(m-4)}{(m+7)(m-7)}} =$

(109.)

$$\frac{y^2 + 6y}{y+5} + \frac{y^2 + 4y}{y+5} =$$

$$\frac{(y^2 + 6y) + (y^2 + 4y)}{y+5} =$$

$$\frac{y^2 + 6y + y^2 + 4y}{y+5} =$$

$$\frac{2y^2 + 10y}{y+5} =$$

$$\frac{2y(y+5)}{(y+5)} =$$

$$\boxed{2y} =$$

36

(110.)

$$\frac{2}{x+6} - \frac{5}{x-6} = \qquad LCD = (x+6)(x-6)$$

$$\left(\frac{2}{x+6}\right)\left(\frac{x-6}{x-6}\right) - \left(\frac{5}{x-6}\right)\left(\frac{x+6}{x+6}\right) =$$

$$\frac{2(x-6) - 5(x+6)}{(x+6)(x-6)} = \qquad OR \qquad \boxed{\frac{-3(x+14)}{(x+6)(x-6)}} =$$

$$\boxed{\frac{2x - 12 - 5x - 30}{(x+6)(x-6)} =}$$

$$\boxed{\frac{-3x - 42}{(x+6)(x-6)}} =$$

(111) $\dfrac{\dfrac{4}{x} + \dfrac{7}{x^2}}{\dfrac{16}{x^2} - \dfrac{49}{x}} =$ $\boxed{LCD = x^2}$

$\boxed{\boxed{37.}}$

$\dfrac{\left(\dfrac{4}{x} + \dfrac{7}{x^2}\right) \dfrac{x^2}{1}}{\left(\dfrac{16}{x^2} - \dfrac{49}{x}\right) \dfrac{x^2}{1}} =$

$\dfrac{\dfrac{4x^2}{x} + \dfrac{7x^2}{x^2}}{\dfrac{16x^2}{x^2} - \dfrac{49x^2}{x}} =$

$\boxed{\dfrac{4x + 7}{16 - 49x}} =$

(112) $\dfrac{\dfrac{2}{x} - \dfrac{5}{y}}{\dfrac{2}{x} + \dfrac{5}{y}} =$ $\boxed{LCD = xy}$

$\dfrac{\left(\dfrac{2}{x} - \dfrac{5}{y}\right) \dfrac{xy}{1}}{\left(\dfrac{2}{x} + \dfrac{5}{y}\right) \dfrac{xy}{1}} =$

$\dfrac{\dfrac{2xy}{x} - \dfrac{5xy}{y}}{\dfrac{2xy}{x} + \dfrac{5xy}{y}} =$

$\boxed{\dfrac{2y - 5x}{2y + 5x}} =$

Find the Domain

(113) $f(x) = \dfrac{9x-2}{x^2-16}$

Set $x^2 - 16 = 0$

$\quad (x)^2 - (4)^2 = 0$

$\quad (x+4)(x-4) = 0$

$\quad x+4 = 0 \quad$ or $\quad x-4 = 0$

$x+4-4 = 0-4 \quad$ OR $\quad x-4+4 = 0+4$

$\qquad \boxed{x = -4} \quad$ or $\quad \boxed{x = 4}$

$\boxed{\text{Domain} = D = \{x \mid x \neq -4 \text{ or } x \neq 4\}}$

(114) $\dfrac{3}{y+3} - \dfrac{8}{y-3} = \dfrac{2}{y^2-9} \qquad LCD = (y+3)(y-3)$

$\dfrac{3}{y+3} - \dfrac{8}{y-3} = \dfrac{2}{(y+3)(y-3)}$

$\left(\dfrac{3}{y+3}\right)(y+3)(y-3) - \left(\dfrac{8}{y-3}\right)(y+3)(y-3) = \dfrac{2}{(y+3)(y-3)}(y+3)(y-3)$

$3(y-3) - 8(y+3) = 2$

$3y - 9 - 8y - 24 = 2$

$-5y - 33 = 2$

$-5y - 33 + 33 = 2 + 33$

$-5y = 35$

$\dfrac{-5y}{-5} = \dfrac{35}{-5}$

$\boxed{y = -7}$

115. $W = \frac{P}{2} - L$ solve for P $LCD = 2$

$2W = 2\left(\frac{P}{2}\right) - 2(L)$

$2W = P - 2L$

$2W + 2L = P - 2L + 2L$

$\boxed{2W + 2L = P}$

$\boxed{39}$

116. $\sqrt{36} =$

$\sqrt{(6)^2} =$

$\boxed{6 =}$

117. $\sqrt{63} =$

$\sqrt{9 \cdot 7} =$

$\sqrt{9}\sqrt{7} =$

$\boxed{3\sqrt{7} =}$

$3\underline{)63}$
$3\underline{)21}$
$7\underline{)7}$
$\quad 1$

Primes $2, 3, 5, 7, 11, 13, 19$

118. $12\sqrt{2} - 8\sqrt{2} - \sqrt{2} =$

$12\sqrt{2} - 8\sqrt{2} - 1\sqrt{2} =$

$4\sqrt{2} - 1\sqrt{2} =$

$\boxed{3\sqrt{2} =}$

119. $\sqrt{7}\sqrt{35} =$

$\sqrt{7 \cdot 35} =$

$\sqrt{245} =$

$\sqrt{49 \cdot 5} =$

$\sqrt{49}\sqrt{5} =$

$\boxed{7\sqrt{5}}$

$5\underline{)245}$
$7\underline{)49}$
$7\underline{)7}$
$\quad 1$