

Math 0320 Warmup 101 Step

①

$$4x < -24$$

$$\frac{4x}{4} < \frac{-24}{4}$$

$$x < -6$$



$$(-\infty, -6)$$

01-25-19

01-27-19

01-29-19

01-31-19

②

$$-8x \leq 24$$

$$\frac{-8x}{-8} \geq \frac{24}{-8}$$

Divide by a -8 and
turn alligator around.

$$x \geq -3$$



$$[-3, \infty)$$

$$(3) \quad h(x) = 5x^2 - 2$$

$$h(-1) = 5(-1)^2 - 2$$

$$h(-1) = 5(-1)(-1) - 2$$

$$h(-1) = 5(1) - 2$$

$$h(-1) = 5 - 2$$

$$h(-1) = 3$$

✓✓✓

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

$$h(0) = 5(0)(0) - 2$$

$$h(0) = 5(0) - 2$$

$$h(0) = 0 - 2$$

$$h(0) = -2$$

✓✓✓

$$h(1) = 5(1)^2 - 2$$

$$h(1) = 5(1)(1) - 2$$

$$h(1) = 5(1) - 2$$

$$h(1) = 5 - 2$$

$$h(1) = 3$$

✓✓✓



$$\textcircled{4} \quad \begin{aligned} x+y &= 7 \\ 2x+3y &= 15 \end{aligned}$$

is $(6, 1)$ a solution?
x y

Subst

$$(6) + (1) = 7$$

$$\begin{aligned} 6+1 &= 7 \\ 7 &= 7 \quad \text{yes} \end{aligned}$$

Subst

$$2(6) + 3(1) = 15$$

$$12 + 3 = 15$$

$$15 = 15$$

yes
Good

YES
 $(6, 1)$ is a solution

✓✓✓

is $(2, 5)$ a solution?
x y

$$x+y = 7$$

$$2x+3y = 15$$

✓

$$(2) + (5) = 7$$

$$2+5 = 7 \quad \text{Good}$$

$$7 = 7 \quad \text{yes}$$

$$2(2) + 3(5) = 15$$

$$4 + 15 = 15$$

$$19 \neq 15$$

NO

Bad

~~NO~~
 $(2, 5)$ is not a solution

5.

$$3x + 2y = 17$$

$$4x - 2y = 18$$

$$7x + 0 = 35$$

$$7x = 35$$

$$\frac{7x}{7} = \frac{35}{7}$$

$$x = 5$$

Subst

$$3x + 2y = 17$$

$$3(5) + 2y = 17$$

$$15 + 2y = 17$$

$$15 + 2y - 15 = 17 - 15$$

$$2y = 2$$

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

$$y = 1$$

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

$$\textcircled{6} \quad \begin{aligned} x + 4y &= 6 \\ 6x + 3y &= -6 \end{aligned}$$

$$\left. \begin{aligned} (x + 4y &= 6) & (-3) \\ (6x + 3y &= -6) & (4) \end{aligned} \right\} \text{Multi}$$

$$-3x - 12y = -18$$

$$24x + 12y = -24$$

$$\hline 21x + 0 = -42$$

$$21x = -42$$

$$\frac{21x}{21} = \frac{-42}{21}$$

$$\textcircled{x = -2}$$

Subst

$$x + 4y = 6$$

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

$$-2 + 4y = 6$$

$$-2 + 4y + 2 = 6 + 2$$

$$4y = 8$$

$$\frac{4y}{4} = \frac{8}{4}$$

$$\textcircled{y = 2}$$

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

$$\textcircled{7} \quad Q(x) = 5x^2 - 1$$

$$Q(-10) = 5(-10)^2 - 1$$

$$Q(-10) = 5(-10)(-10) - 1$$

$$Q(-10) = 5(100) - 1$$

$$Q(-10) = 500 - 1$$

$$Q(-10) = 499$$

$$\textcircled{8} \quad P(x) = x^2 + x + 5$$

$$P(0) = (0)^2 + (0) + 5$$

$$P(0) = (0)(0) + (0) + 5$$

$$P(0) = 0 + 0 + 5$$

$$P(0) = 0 + 5$$

$$P(0) = 5$$

9.

$$(5x^2 + 2) - (10x^2 - 5) =$$
$$5x^2 + 2 - 10x^2 + 5 =$$

PEMDAS

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

10.

$$4x - (5x - 2) =$$

PEMDAS

$$4x - 1(5x - 2) =$$
 Rewrite

$$4x - 5x + 2 =$$

$$-(x + 2) =$$

$$-x + 2 =$$

$$\textcircled{11} \quad (9y^2 + 8y - 9) - (-4y + 4) =$$

$$(9y^2 + 8y - 9) - 1(-4y + 4) = \text{rewrite}$$

$$9y^2 + 8y - 9 + 4y - 4 =$$

PLSMDAS

$$9y^2 + 12y - 13 =$$

$$\textcircled{12.} \quad (-6y^2 - 8y) + (8y^2 + y - 2) =$$

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

$$2y^2 - 7y - 2 =$$

13.

$$(5x+9) - (-9x^2 - 6x + 9) =$$

$$(5x+9) - 1(-9x^2 - 6x + 9) =$$

$$5x + 9 + 9x^2 + 6x - 9 = \text{PEMDAS}$$

$$9x^2 + 11x =$$

14.

$$6x(5x+7) =$$

PEMDAS

$$30x^{1+1} + 42x =$$

$$30x^2 + 42x =$$

$$\textcircled{15} \quad 4x(3x^2 - 3x + 5) =$$

$$12x^{1+2} - 12x^{1+1} + 20x =$$

$$12x^3 - 12x^2 + 20x =$$

$$\textcircled{16} \quad (a+3)(a-9) =$$

$$a^2 - 9a + 3a - 27 =$$

$$a^2 - 6a - 27 =$$

(17.)

$$(9y+8)^2 =$$

$$(9y+8)(9y+8) =$$

$$81y^2 + 72y + 72y + 64 =$$

$$81y^2 + 144y + 64 =$$

(18.)

$$(2x+4)(4x+7) =$$

$$8x^2 + 14x + 16x + 28 =$$

$$8x^2 + 30x + 28 =$$

19.

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

$$x^3 - 2x^2 + 4x - 6x^2 + 12x - 24 =$$

$$x^3 - 8x^2 + 16x - 24 =$$

20.

$$(x+7)(x^3-3x+6) =$$

$$x^4 - 3x^2 + 6x + 7x^3 - 21x + 42 =$$

$$x^4 + 7x^3 - 3x^2 - 15x + 42 =$$

(21)

$$(5a-5)(3a^2+7a+3)$$

$$15a^3 + 35a^2 + 15a - 15a^2 - 35a - 15 =$$

$$15a^3 + 20a^2 - 20a - 15 =$$

(22)

$$(6x-13)(4x+1) =$$

$$24x^2 + 6x - 52x - 13 =$$

$$24x^2 - 46x - 13 =$$

23.

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

$$20x^3 + 15x^2 - 5x + 4x^2 + 3x - 1 =$$

$$20x^3 + 19x^2 - 2x - 1 =$$

24.

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

PEMDAS

$$-2x^3 - 10x^2 + 6x =$$

25.

$$(8x+7)^2 =$$

$$(8x+7)(8x+7) =$$

$$64x^2 + 56x + 56x + 49 =$$

$$64x^2 + 112x + 49 =$$

26.

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

$$16x^2 - 24x - 16x + 24 =$$

$$16x^2 - 40x + 24 =$$

(27)

$$(8x+1)(5x-6) =$$

$$40x^2 - 48x + 5x - 6 =$$

$$40x^2 - 43x - 6 =$$

(28)

$$(x+1)^2 =$$

$$(x+1)(x+1) =$$

$$x^2 + 1x + 1x + 1 =$$

$$x^2 + 2x + 1 =$$

29.

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

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

$$4x^2 - 6x - 6x + 9 =$$

$$4x^2 - 12x + 9 =$$

30.

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

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

$$25x^2 - 35x - 35x + 49 =$$

$$25x^2 - 70x + 49 =$$

31. $(8x+6)^2 =$

$(8x+6)(8x+6) =$

$64x^2 + 48x + 48x + 36 =$

$64x^2 + 96x + 36 =$

32. $(7x^2 + 13x + 9) \div (x+1)$

$7x + 5 + \frac{3}{x+1}$

Long
division

$$\begin{array}{r} x+1 \overline{) 7x^2 + 13x + 9} \\ \underline{-(7x^2 + 7x)} \\ 5x + 9 \\ \underline{-(5x + 5)} \\ 3 \end{array}$$

3 rem

OR

$7x^2 + 13x + 9$

use Synthetic
division

opp $x+1$

$$\begin{array}{r|rrrr} -1 & 7 & 13 & 9 & \\ & & -7 & -5 & \\ \hline & 7 & 5 & 3 & \end{array}$$

3 rem

$7x + 5 + \frac{3}{x+1}$

33) $8x + 24 =$ factor GCF

$$8(x+3) =$$

34) $-20x^3y^3 - 8x^5y^2 =$ factor GCF

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

$$4x^3y^2(-5y - 2x^2) =$$

35

$$x^2 + 7x + 12 = \text{factor}$$

- possible
- 12.1
 - 6.2
 - 3.4

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

36

$$x^2 - 12x + 35 = \text{factor}$$

- possible
- 35.1
 - 7.5

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

37.

$$x^2 + 9x + 14 =$$

Factor

Possible
14.1

2.7

$$(x+2)(x+7) =$$

38.

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

Factor

Possible

2.1

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

39

$$x^2 - 6x + 9 = \text{factor}$$

possibly

9.1

3.3

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

40

$$x^2 - x - 12 = \text{factor}$$

possibly

12.1

6.2

3.4

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

(41)

$$x^2 + 4x - 5 =$$

Factor

Possible
5 · 1

$$(x-1)(x+5) =$$

(42)

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

Factor

Possible

(3 · 1)

Only

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

ck

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

$$x^2 + 4x + 3 =$$

No

The polynomial is prime

(43)

$$x^2 + 9xy + 8y^2 = \text{factor}$$

Possible
8.1
2.4

$$(x + 1y)(x + 8y) =$$

(44)

$$a^4 - 3a^2 - 10 = \text{factor}$$

Possible -
10.1
2.5

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

45 $13 + 14m + m^2 =$ factor

possible
13.1

$m^2 + 14m + 13 =$ rewrite

$(m + 1)(m + 13) =$

46 $10t - 24 + t^2 =$ factor

possible
24.1
12.2
6.4
3.8

$t^2 + 10t - 24 =$

$(t - 2)(t + 12) =$

(47) $a^2 - 12ab + 35b^2 =$ Factor

Possible

35.1

7.5

$(a - 5b)(a - 7b) =$

(48) $3x^2 + 33x + 84 =$

Factor Possible

28.1

14.2

7.4

$3(x^2 + 11x + 28) =$

$3(x + 4)(x + 7) =$

(49) $2x^3 - 10x^2 + 8x = \text{factor}$

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

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

Possible

4, 1

2, 2

(50)

$$x^2 - 7xy - 8y^2 = \text{factor}$$

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

Possible

8, 1

2, 4

(51.) $x^2 + 15x + 14 =$ Factor

Possible
14, 1
2, 7

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

(52.) $x^2 - x - 110 =$ Factor

Possible

110, 1

55, 2

5, 22

10, 11

$(x + 10)(x - 11) =$

(53) $r^2 - 21r + 54 = \text{factor}$

$$(r - 3)(r - 18) =$$

Possibly

54.1

27.2

9.6

3.18

(54) $x^2 + 11xy - 12y^2 = \text{factor}$

$$(x - 1y)(x + 12y) =$$

Possibly

12.1

3.4

6.2

55.

$$6x^2 + 30x - 84 =$$

factor

Possible

$$6(x^2 + 5x - 14) =$$

14, 1
2, 7

$$6(x - 2)(x + 7) =$$



56.

$$3x^2 - 39x + 108 =$$

factor

Possible

$$3(x^2 - 13x + 36) =$$

36, 1
18, 2
9, 4
12, 3
~~9, 1~~

$$3(x - 4)(x - 9) =$$



57. $x^2 - 21x - 100 =$ factor

$(x + 4)(x - 25) =$

Possible
10.1
50.2
25.4
10.10

58. $t^2 - 8t + 6 =$ factor

$(t - 1)(t - 6) =$

$t^2 - 6t - t + 6 =$

$t^2 - 7t + 6 =$ NO

Possible
6.1 NO
2.3 NO

$(t + 2)(t + 3) =$

$t^2 + 3t + 2t + 6 =$

$t^2 + 5t + 6$

the polynomial
is **prime**

NO

(59.)

$$x^2 - 9x + 14 = \text{factor}$$

Possible
14.1
2.7

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

(60.)

$$4x^3 + 40x^2 + 96x =$$

$$4x(x^2 + 10x + 24) =$$

$$4x(x + 4)(x + 6) =$$

Factor possible

24.1

12.2

(6.4)

3.8

61. $5x^2y + 20xy - 65y =$ factor

$$5y(x^2 + 4x - 13) =$$

62. $x^2 - x - 2 =$ factor

possible
2, 1

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

(63) $144x^2 - 121y^2 =$ factor formula

$$(12x)^2 - (11y)^2 =$$

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

$$(12x + 11y)(12x - 11y) =$$

Solve

(64) $(4x+5)(8x-9) = 0$

Let $4x+5=0$ OR $8x-9=0$

$4x+5-5=0-5$ OR $8x-9+9=0+9$

$4x=-5$ OR $8x=9$

$\frac{4x}{4} = \frac{-5}{4}$ OR $\frac{8x}{8} = \frac{9}{8}$

$x = -\frac{5}{4}$ OR $x = \frac{9}{8}$

Solve

$$(65.) \quad X^2 - 10X + 24 = 0$$

$$(X - 4)(X - 6) = 0$$

Let $X - 4 = 0$ OR $X - 6 = 0$

$X - 4 + 4 = 0 + 4$ OR $X - 6 + 6 = 0 + 6$

$$X = 4$$

OR $X = 6$

Possible
24.1
12.2
6.4
3.8

Solve

$$(66.) \quad X^2 + 3X - 10 = 0$$

$$(X - 2)(X + 5) = 0$$

Let $X - 2 = 0$ OR $X + 5 = 0$

$X - 2 + 2 = 0 + 2$ OR $X + 5 - 5 = 0 - 5$

$$X = 2$$

OR $X = -5$

Possible

10.1

2.5

67

Solve $x^2 - 6x = 27$

$$x^2 - 6x - 27 = 27 - 27$$

$$x^2 - 6x - 27 = 0$$

$$(x + 3)(x - 9) = 0$$

Let $x + 3 = 0$

$$x + 3 - 3 = 0 - 3$$

$$x = -3$$

OR

$$x - 9 = 0$$

OR

$$x - 9 + 9 = 0 + 9$$

$$x = 9$$

Possible
27.1
9.3

68

Solve $(x-1)(x+8) = 5x$

$$x^2 + 8x - 1x - 8 = 5x$$

$$x^2 + 7x - 8 = 5x$$

$$x^2 + 7x - 8 - 5x = 5x - 5x$$

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

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

Let $x - 2 = 0$

OR

$$x + 4 = 0$$

$$x - 2 + 2 = 0 + 2$$

OR

$$x + 4 - 4 = 0 - 4$$

$$x = 2$$

OR

$$x = -4$$

Possible

8.1

2.4

(69)

$$X^3 - 12x^2 + 35x = 0$$

Solve

Possibly

35.1

7.5

$$X(X^2 - 12x + 35) = 0$$

$$X(X - 5)(X - 7) = 0$$

set $X=0$ OR $X-5=0$ OR $X-7=0$

$X-5+5=0+5$ OR $X-7+7=0+7$

$X=5$ OR $X=7$

(70)

$$X^2 - 8 = -2x$$

Solve

Possibly

8.1

2.4

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

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

$$(X - 2)(X + 4) = 0$$

set $X-2=0$ OR $X+4=0$

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

$X=2$ OR $X=-4$

$$(71) \quad 9x^2 - 19x - 24 = 0$$

$$(9x + 8)(x - 3) = 0$$

$$\text{Let } 9x + 8 = 0 \quad \text{OR} \quad x - 3 = 0$$

$$9x + 8 - 8 = 0 - 8 \quad \text{OR} \quad x - 3 + 3 = 0 + 3$$

$$9x = -8 \quad \text{OR} \quad x = 3$$

$$\frac{9x}{9} = \frac{-8}{9} \quad \text{OR}$$

$$x = \frac{-8}{9}$$

Solve

$$(72) \quad (x-2)(x+5) = 8$$

$$x^2 + 5x - 2x - 10 = 8$$

$$x^2 + 3x - 10 = 8$$

$$x^2 + 3x - 10 - 8 = 8 - 8$$

$$x^2 + 3x - 18 = 0$$

$$(x-3)(x+6) = 0$$

$$\text{Let } x - 3 = 0 \quad \text{OR} \quad x + 6 = 0$$

$$x - 3 + 3 = 0 + 3 \quad \text{OR} \quad x + 6 - 6 = 0 - 6$$

$$x = 3$$

$$\text{OR} \quad x = -6$$

Solve possible

9.1

24.1

35

10.2

6.4

3.8

Possible

18.1

9.2

6.3

73

$$x^2 + 12x + 36 = 0$$

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

$$\text{either } x+6=0 \text{ OR } x+6=0$$

$$x+6-6=0-6 \text{ OR } x+6-6=0-6$$

$$x = -6$$

OR

$$x = -6$$

Solve

Possible

$$36, 1$$

$$18, 2$$

$$12, 3$$

$$6, 6$$

$$4, 9$$

74.

Simplifying

$$\frac{-4a+4b}{a-b} =$$

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

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

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

$$-4 =$$

75

$$\frac{x}{2x-12} \div \frac{x^2-6x}{3} =$$

$$\frac{x}{2(x-6)} \div \frac{x(x-6)}{3} =$$

$$\frac{x}{2\cancel{(x-6)}} \div \frac{x\cancel{(x-6)}}{3} =$$

$$\frac{x^2}{6} =$$

76

$$\frac{x^2+5x+4}{x-3} \div \frac{x^2-5x-6}{x-3} =$$

Simplify

$$\frac{x^2+5x+4}{x-3} \div \frac{x-3}{x^2-5x-6} =$$

Rewrite

$$\frac{(x+1)(x+4)}{(x-3)} \div \frac{(x-3)}{(x+1)(x-6)} =$$

$$\frac{\cancel{(x+1)}(x+4)}{\cancel{(x-3)}} \div \frac{\cancel{(x-3)}}{\cancel{(x+1)}(x-6)} =$$

$$\frac{x+4}{x-6} =$$

$$\textcircled{77} \quad \frac{8}{6+y} + \frac{y+5}{6+y} = \quad \text{Simplify}$$

$$\frac{(8) + (y+5)}{6+y} =$$

$$\frac{8+y+5}{6+y} =$$

$$\frac{y+13}{6+y} =$$

$$\textcircled{78} \quad \frac{z-8}{3} = \frac{z}{5} \quad \text{Solve}$$

$$5(z-8) = 3(z) \quad \text{cross mult}$$

$$5z - 40 = 3z$$

$$5z - \cancel{40} + 40 = 3z + 40$$

$$5z = 3z + 40$$

$$5z - 3z = \cancel{3z} + 40 - \cancel{3z}$$

$$2z = 40$$

$$\frac{2z}{2} = \frac{40}{2}$$

$$z = 20$$

79

$$\frac{3}{2y-5} = -1$$

$$\frac{3}{2y-5} = \frac{-1}{1}$$

$$1(3) = -1(2y-5) \quad \text{Cross mult}$$

$$3 = -2y + 5$$

$$3 - 5 = -2y + 5 - 5$$

$$-2 = -2y$$

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

$$1 = y$$

80.

$$f(x) = -2x + 12$$

$$f(0) = -2(0) + 12$$

$$f(0) = 0 + 12$$

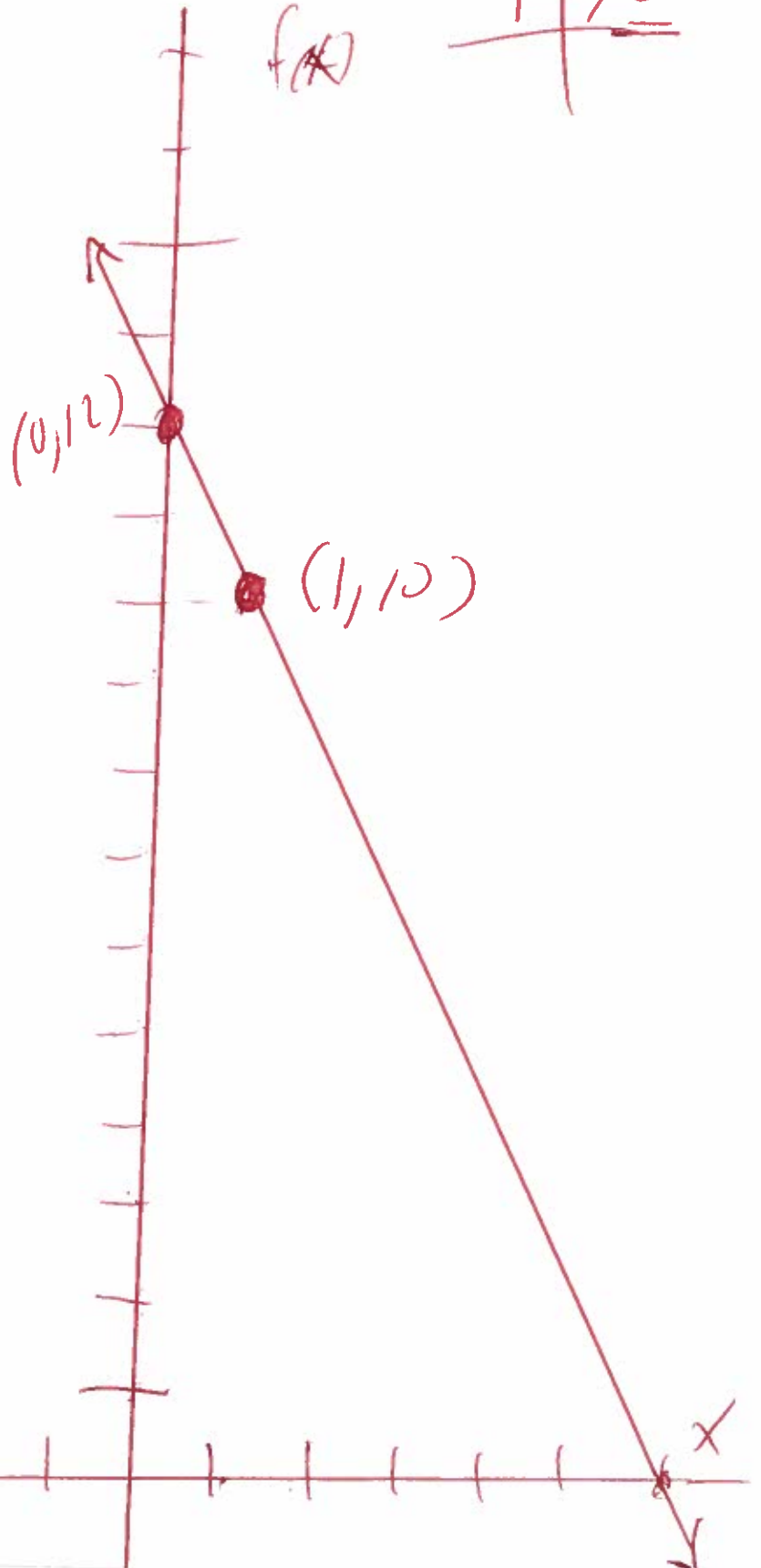
$$f(0) = 12$$

$$f(1) = -2(1) + 12$$

$$f(1) = -2 + 12$$

$$f(1) = 10$$

x	$f(x)$
0	12
1	10



$$\textcircled{81} \quad |2x-1|=7$$

$$2x-1=-7 \quad \text{OR} \quad 2x-1=7$$

$$2x-\cancel{1}+\cancel{1}=-7+1 \quad \text{OR} \quad 2x-\cancel{1}+\cancel{1}=7+1$$

$$2x=-6 \quad \text{OR} \quad 2x=8$$

$$\frac{2x}{2}=\frac{-6}{2} \quad \text{OR} \quad \frac{\cancel{2}x}{\cancel{2}}=\frac{8}{2}$$

$$x=-3 \quad \text{OR} \quad x=4$$

formula

$$|x|=a$$
$$x=-a \quad \text{OR} \quad x=a$$

$$\textcircled{82} \quad |x-2|<6$$

$$-6 < x-2 < 6$$

$$-6+2 < x-\cancel{2}+\cancel{2} < 6+2$$

$$-4 < x < 8$$



$$(-4, 8)$$

formula

$$|x|<a$$
$$-a < x < a$$

$$\textcircled{83} \quad |x+9| \geq 11$$

$$x+9 \leq -11 \quad \text{OR} \quad x+9 \geq 11$$

Formula

$$|x| > a$$
$$x < -a \quad \text{OR} \quad x > a$$

$$x+9-9 \leq -11-9 \quad \text{OR} \quad x+9-9 \geq 11-9$$

$$x \leq -20$$

$$\text{OR} \quad x \geq 2$$



$$(-\infty, -20] \cup [2, \infty)$$

84

$$\sqrt{25a^4b^{40}} =$$

$$\sqrt{5^2 a^4 b^{40}} = \text{rewrite}$$

$$5^{\frac{2}{2}} a^{\frac{4}{2}} b^{\frac{40}{2}} =$$

$$5^1 a^2 b^{20} =$$

$$5a^2b^{20} =$$

Prime 2, 3, 5, 7...

$$\begin{array}{r} 5 \overline{) 25} \\ \underline{5} \\ 5 \\ \underline{5} \\ 0 \\ 1 \end{array}$$

85

$$f(x) = \sqrt{x-8}$$

graph

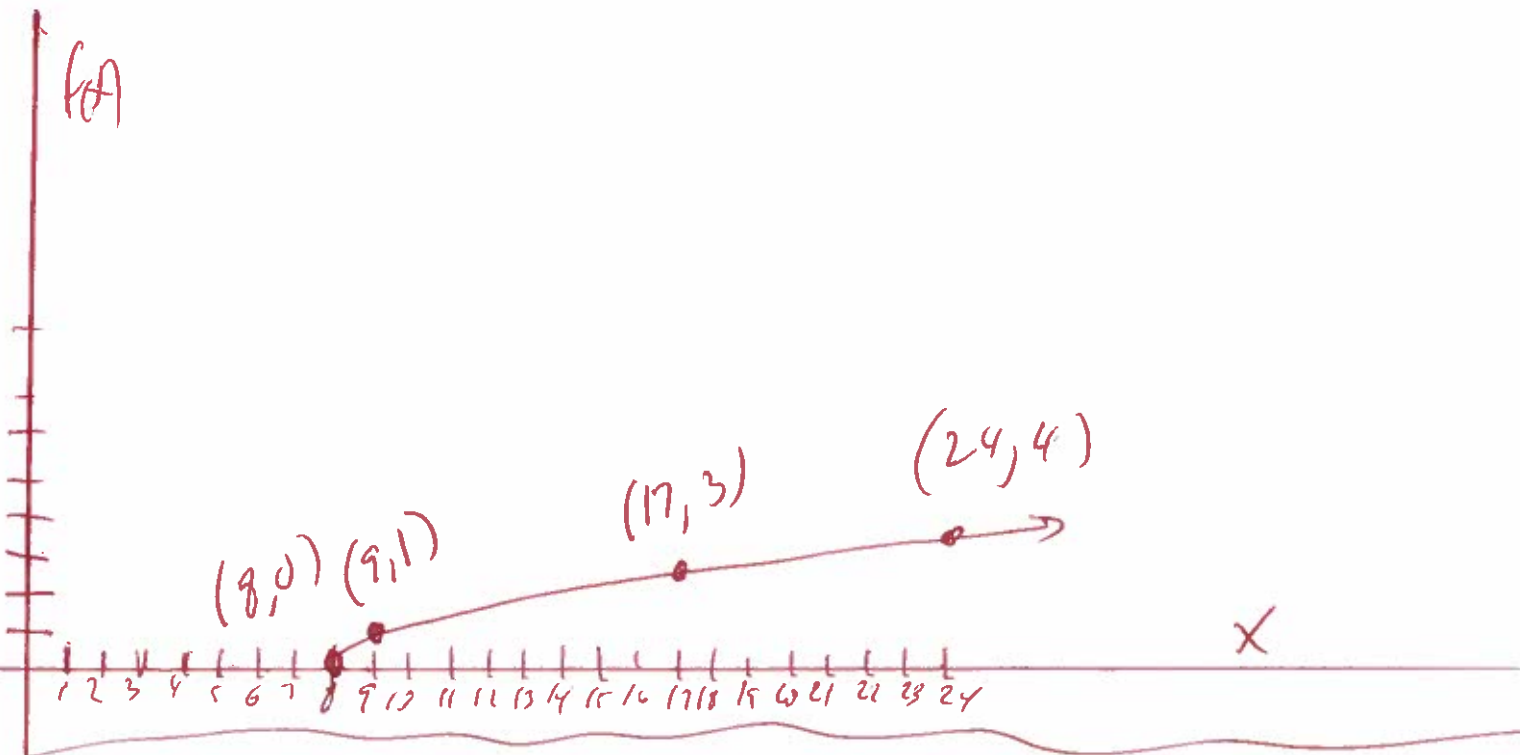
$$f(8) = \sqrt{8-8} = \sqrt{0} = 0$$

$$f(9) = \sqrt{9-8} = \sqrt{1} = 1$$

$$f(17) = \sqrt{17-8} = \sqrt{9} = 3$$

$$f(24) = \sqrt{24-8} = \sqrt{16} = 4$$

x	f(x)
8	0
9	1
17	3
24	4



$$\textcircled{86} \quad 243^{2/5} =$$

$$(3^5)^{2/5} = \text{rewrite}$$

$$(3^{5/1})^{2/5} =$$

$$3^{5(2/5)} = \text{mult power}$$

$$3^{10/5} =$$

$$3^2 =$$

$$(3)(3) =$$

$$\textcircled{9} =$$

Primes 2, 3, 5, 7...

$$\begin{array}{r} 3 \overline{) 243} \\ \underline{3(81)} \\ 3 \overline{) 27} \\ \underline{3(9)} \\ 3 \overline{) 3} \\ \underline{3} \\ 1 \end{array}$$

87. $\sqrt{75} =$

$\sqrt{25 \cdot 3} =$

$\sqrt{25} \sqrt{3} =$

$5\sqrt{3} =$

Prima 2, 3, 5, 7, ...

$$\begin{array}{r} 3 \overline{) 75} \\ \underline{50} \\ 25 \\ \underline{25} \\ 0 \\ 1 \end{array}$$

88. $\sqrt{121x^5} =$

$\sqrt{11^2x^5} =$

$\sqrt{11^2x^4x^1} =$

$11^{\frac{2}{2}}x^{\frac{4}{2}}\sqrt{x^1} =$ divide powers

$11^1x^2\sqrt{x^1} =$

$11x^2\sqrt{x} =$

Prima 2, 3, 5, 7, 11, ...

$$\begin{array}{r} 11 \overline{) 121} \\ \underline{110} \\ 11 \\ \underline{11} \\ 0 \\ 1 \end{array}$$

89 Part 1

$$\sqrt{36a^4b^7}$$

$$\sqrt{2^2 \cdot 3^2 \cdot a^4 \cdot b^6 \cdot b^1} =$$

$$2^{\frac{2}{2}} \cdot 3^{\frac{2}{2}} \cdot a^{\frac{4}{2}} \cdot b^{\frac{6}{2}} \sqrt{b^1} =$$

$$2^1 \cdot 3^1 \cdot a^2 \cdot b^3 \sqrt{b^1} =$$

$$2 \cdot 3 \cdot a^2 \cdot b^3 \sqrt{b} =$$

$$6a^2b^3\sqrt{b} =$$

Primes 2, 3, 5, 7...

2	36
2	18
3	9
3	3

Divide 1
Times

89. Part 2

OR

$$\sqrt{36a^4b^7} =$$

$$\sqrt{6^2 \cdot a^4 \cdot b^6 \cdot b^1} =$$

$$6^{\frac{2}{2}} \cdot a^{\frac{4}{2}} \cdot b^{\frac{6}{2}} \sqrt{b^1} =$$

$$6^1 \cdot a^2 \cdot b^3 \sqrt{b^1} =$$

$$6a^2b^3\sqrt{b} =$$

$$\textcircled{90} \quad \sqrt{x-13} = 7$$

$$(\sqrt{x-13})^2 = (7)^2$$

$$x-13 = 49$$

$$x-13+13 = 49+13$$

$$x = 62$$

Check

$$\sqrt{x-13} = 7$$

$$\sqrt{62-13} = 7$$

$$\sqrt{49} = 7$$

$$7 = 7$$

Good



$$\textcircled{91} \quad \sqrt{x+3} = \sqrt{2x-5}$$
$$(\sqrt{x+3})^2 = (\sqrt{2x-5})^2$$

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

$$x + \cancel{3} - \cancel{3} = 2x - 5 - 3$$

$$x = 2x - 8$$

$$1x - 2x = 2x - 8 - 2x$$

$$-1x = -8$$

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

$$\textcircled{x = 8}$$

Check

$$\sqrt{x+3} = \sqrt{2x-5}$$

$$\sqrt{8+3} = \sqrt{2(8)-5}$$

$$\sqrt{11} = \sqrt{16-5}$$

$$\sqrt{11} = \sqrt{11}$$

Good