

$$① (-14 - 28) \div 14 - 23 =$$

$$(-42) \div 14 - 23 =$$

$$-3 - 23 =$$

$$-26 =$$

Math 04/05/ Step

08-30-18

you
don't
do
it

$$② 3(y-5) = y-15$$

$$3y - 15 = y - 15$$

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

$$3y = y$$

$$3y = 1y$$

$$3y - 1y = 1y - 1y$$

$$2y = 0$$

$$\frac{2y}{2} = \frac{0}{2}$$

$$y = 0$$

3

$$5(3x-3) = 16x$$

$$15x - 15 = 16x$$

$$15x - \cancel{15} + \cancel{15} = 16x + 15$$

$$15x = 16x + 15$$

$$15x - 16x = \cancel{16x} + 15 - \cancel{16x}$$

$$-1x = 15$$

$$\frac{-1x}{-1} = \frac{15}{-1}$$

$$x = -15$$

4

$$\frac{1}{4} - \frac{3}{10} = \text{Prime } 2, 3, 5, 7$$

$$\frac{1}{4} \left(\frac{5}{5} \right) - \frac{3}{10} \left(\frac{2}{2} \right) =$$

$$\frac{5}{20} - \frac{6}{20} =$$

$$\frac{5-6}{20} =$$

$$\frac{-1}{20} =$$

$$\begin{array}{r} 2 \cancel{4} \quad 2 \cancel{10} \\ 2 \cancel{2} \quad 5 \cancel{5} \\ 1 \quad 1 \end{array}$$

$$\begin{array}{l} 4 = 2 \cdot 2 \\ 10 = 2 \cdot 5 \\ \hline \text{LCD} = 2 \cdot 2 \cdot 5 \\ = 20 \end{array}$$

(5)

$$\frac{1}{7}x = 9$$

$$\frac{7}{7}(\frac{1}{7}x) = \frac{7}{7}(\frac{9}{1}) \text{ Mult}$$

$$x = \frac{63}{1}$$

$$x = 63$$

(6)

$$\frac{k}{6} + 5 = \frac{5}{6}$$

$$LCD = 6$$

$$\frac{k}{6} + \frac{5}{1} = \frac{5}{6}$$

$$\frac{k}{6}(6) + \frac{5}{1}(6) = \frac{5}{6}(6) \text{ Mult}$$

$$k(1) + 5(6) = 5(1) \text{ Divide}$$

$$| k + 30 = 5$$

$$| k + 30 - 30 = 5 - 30$$

$$| k = -25$$

$$k = -25$$

⑦

$$\frac{1}{5} - \frac{7}{6} = \frac{2}{30}$$

$$\text{LCD} = 30$$

$$\frac{1}{5}(30) - \frac{7}{6}(30) = \frac{2}{30}(30) \quad \text{mult}$$

$$1(6) - 7(5) = 2(1) \quad \text{divide}$$

$$6 - 35 = 12$$

$$-29 = 12$$

$$-29 = 2$$

⑧

$$2.7x - 28 = 1.2x + 5$$

$$2.7x - 28 + 28 = 1.2x + 5 + 28$$

$$2.7x = 1.2x + 33$$

$$2.7x - 1.2x = 1.2x + 33 - 1.2x$$

$$1.5x = 33$$

$$\frac{1.5x}{1.5} = \frac{33}{1.5}$$

$$x = 22$$

9 $A = P - PD$, $P = \$459$, $D = 35\% = .35$

$$A = \$459 - \$459(.35)$$

$$A = \$459 - \$160.65 \leftarrow \text{discount}$$

$$A = \$298.35 \leftarrow \text{Sale price}$$

10 $A = P + PRT$, $P = \$92000$, $R = 12.5\% = .125$
 $T = 5$

$$A = \$92000 + \$92000(.125)(5)$$

$$A = \$92000 + \$92000(.625)$$

$$A = \$92000 + \$57,500 \leftarrow \text{interest paid}$$

$$A = \$149,500 \leftarrow \text{Total amount paid}$$

⑪

$$7(x+4)-3=25$$

$$7x+28-3=25$$

$$7x+25=25$$

$$7x+\cancel{25}-\cancel{25}=25-25$$

$$7x=0$$

$$\frac{7x}{7} = \frac{0}{7}$$

$$x=0$$

⑫

$$5(3x-6)=15x-30$$

$$15x-30=15x-30$$

$$15x-\cancel{30}+\cancel{30}=15x-\cancel{30}+\cancel{30}$$

$$15x=15x$$

$$15x-15x=15x-15x$$

$$0=0$$

The solution is all real numbers

(13)

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

$$LCD = 4$$

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

$$\frac{x}{4}(4) + \frac{3}{1}(4) = \frac{x}{4}(4) \quad \text{mult}$$

$$x(1) + 3(4) = x(1) \quad \text{divide}$$

$$1x + 12 = 1x$$

$$1x + \cancel{12} - \cancel{12} = 1x - 12$$

$$1x = 1x - 12$$

$$1x - 1x = \cancel{1x} - 12 - \cancel{1x}$$

$$0 \neq -12$$

There is no solution.

(14)

$$4x + y = 10$$

$$y =$$

$$\cancel{4x} + y - \cancel{4x} = 10 - \cancel{4x}$$

$$y = 10 - 4x$$

OR

$$y = -4x + 10$$

$$(15) Q = R + Rst$$

$$S =$$

$$Q - R = \cancel{R} + Rst - \cancel{R}$$

$$Q - R = Rst$$

$$\frac{Q - R}{Rt} = \frac{\cancel{R}st}{\cancel{Rt}}$$

$$\frac{Q - R}{Rt} = s$$

(16)

$$4x < -12$$

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

divide by a positive
do not turn the allis
around

$$x < -3$$



$$(-\infty, -3)$$

(17)

$$-8x \leq 16$$

$$\frac{-8x}{-8} \geq \frac{16}{-8}$$

divide by a negative and
turn the alligator around

$$x \geq -2$$



$$[-2, \infty)$$

(18)

$$-7x + 4 \geq 2(5 - 2x)$$

$$-7x + 4 \geq 10 - 4x$$

$$-7x + \cancel{4} \geq 10 - 4x - 4$$

$$-7x \geq -4x + 6$$

$$-7x + 4x \geq -\cancel{4x} + 6 + \cancel{4x}$$

$$-3x \geq 6$$

$$\frac{-3x}{-3} \leq \frac{6}{-3}$$

divide by a negative
and turn the alligator
around

$$x \leq -2$$



$$(-\infty, -2]$$

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

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

$$y = 0 + 6$$

$$y = 6$$

$$y = -3(1) + 6$$

$$y = -3 + 6$$

$$y = 3$$

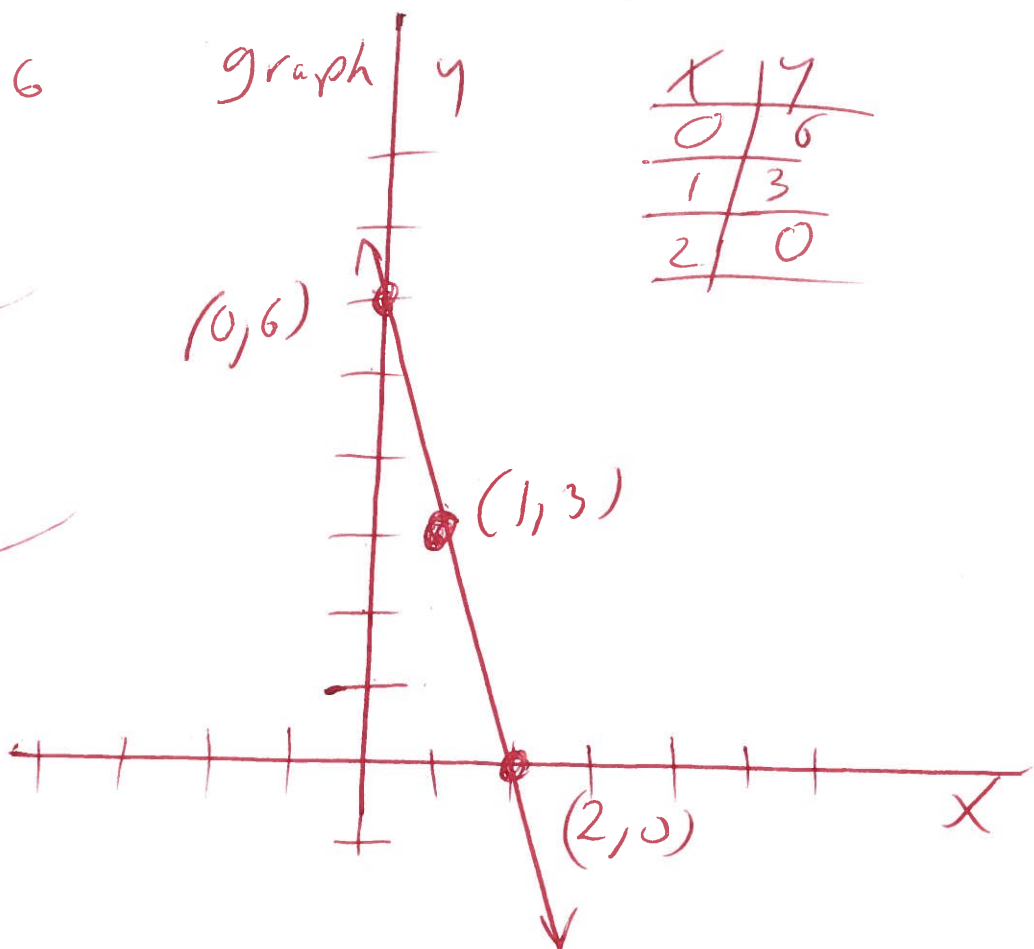
$$y = -3(2) + 6$$

$$y = -6 + 6$$

$$y = 0$$

graph y

x	y
0	6
1	3
2	0



(20) $x + 3y = 6$

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

$$3y = 6 - x$$

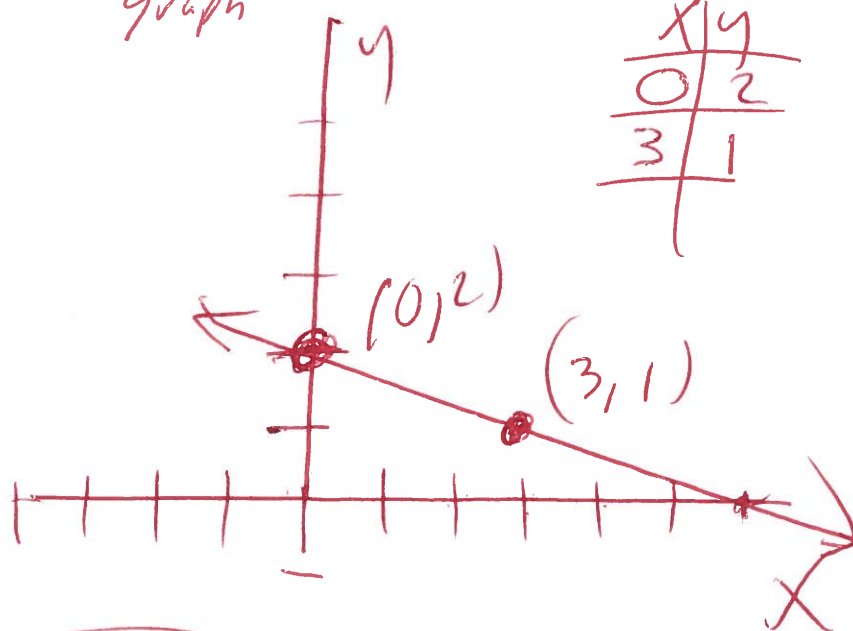
$$\frac{3y}{3} = \frac{6}{3} - \frac{x}{3}$$

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

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

graph

x	y
0	2
3	1



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

$$y = 0 + 2$$

$$y = 2$$

$$y = -\frac{1}{3}(3) + 2$$

$$y = -1 + 2$$

$$y = 1$$

(21) $y = -\frac{1}{2}x - 2$ graph

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

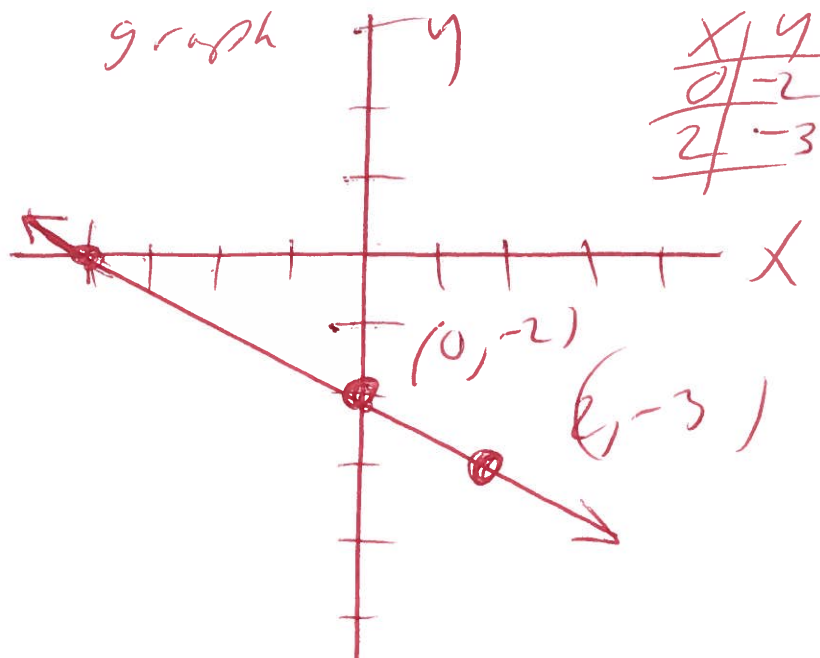
$$y = 0 - 2$$

$$y = -2$$

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

$$y = -1 - 2$$

$$y = -3$$



(22) $7x - 2y = -14$

find x-intercept let $y = 0$

$$7x - 2(0) = -14$$

$$7x - 0 = -14$$

$$7x = -14$$

$$\frac{7x}{7} = \frac{-14}{7}$$

$$x = -2$$

x-intercept

$$(-2, 0)$$

find y-intercept let $x = 0$

$$7x - 2y = -14$$

$$7(0) - 2y = -14$$

$$0 - 2y = -14$$

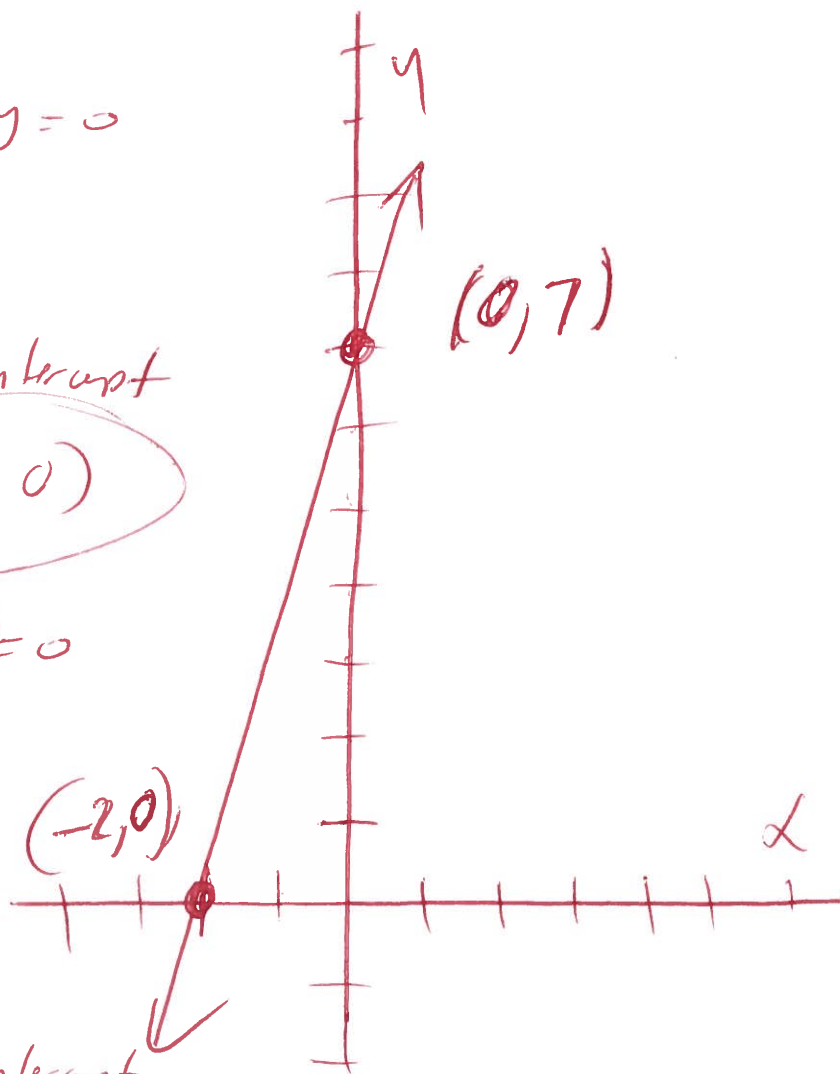
$$-2y = -14$$

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

$$y = 7$$

y-intercept

$$(0, 7)$$



(23) $(-1, 9)$ and $(4, 5)$ find slope
 $x_1 \quad y_1 \quad x_2 \quad y_2$

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

$$m = \frac{(9) - (5)}{(-1) - (4)}$$

$$m = \frac{9 - 5}{-1 - 4}$$

$$m = \frac{4}{-5}$$

$$m = -\frac{4}{5}$$

(24) find the slope

$$y = 5x + 7$$

Slope = $m = 5$

y-intercept = 7
OR

$(0, 7)$

formula

$$y = mx + b$$

Slope = m and y-intercept = b
OR
 $(0, b)$

(25) $9x + y = 5$

find slope formula

$$9x + y - 9x = 5 - 9x$$

$$y = 5 - 9x$$

$$y = -9x + 5$$

Slope $m = -9$

y-intercept = 5

OR

$(0, 5)$

$$y = mx + b$$

Slope = m

y-intercept = b

OR

$(0, b)$

(26)

find slope

$$5x - 6y = 30$$

$$5x - 6y - 5x = 30 - 5x$$

$$-6y = 30 - 5x$$

$$\frac{-6y}{-6} = \frac{30}{-6} - \frac{5x}{-6}$$

$$y = -5 + \frac{5}{6}x$$

$$y = \frac{5}{6}x - 5$$

Slope $m = \frac{5}{6}$

y-intercept = -5

OR

$(0, -5)$

formula

$$y = mx + b$$

Slope = m

y-intercept = b

OR

$(0, b)$

(27) Determine whether the pair of lines are parallel, perpendicular, or neither

$$y = \frac{7}{4}x + 1 \quad \text{Slope} = m_1 = \frac{7}{4}$$

$$y = -\frac{7}{4}x \quad \text{Slope} = m_2 = -\frac{7}{4}$$

$$m_1 = \frac{7}{4}, \quad m_2 = -\frac{7}{4}$$

$$m_1 = \frac{7}{4} \neq -\frac{7}{4} = m_2 \quad \text{Not parallel}$$

$$m_1 \cdot m_2 = \left(\frac{7}{4}\right)\left(-\frac{7}{4}\right) = -\frac{49}{16} \neq -1$$

Not perpendicular

Neither

(28) Slope = 6 = m point (-7, 8)
x y

find equation of the line

$$y - y_1 = m(x - x_1)$$

$$y - (-8) = 6(x - (-7))$$

$$y - 8 = 6(x + 7)$$

$$y - 8 = 6x + 42$$

$$y - \cancel{8} + \cancel{8} = 6x + 42 + 8$$

$$y = 6x + 50$$

29, Slope = $-3 = m$ y-intercept = $(0, 2)$
 x, y

$$y - y_1 = m(x - x_1)$$

$$y - (2) = -3(x - (0))$$

$$y - 2 = -3(x - 0)$$

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

$$y - 2 = -3x$$

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

$$y = -3x + 2$$

(30)
Part 1

$$2x - y = 8$$

$$x + 2y = 9$$

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

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

$$10 - 2 = 8$$

$$8 = 8 \quad \checkmark \quad \text{Good}$$

Subst

$$(5) + 2(2) = 9$$

$$5 + 4 = 9$$

$$9 = 9 \quad \checkmark \quad \text{Good}$$

Subst

YES

$(5, 2)$ is a solution

(30)
Part 2

$$2x - y = 8$$

$$x + 2y = 9$$

Is $(6, 4)$ a solution?
 x, y

$$2(6) - (4) = 8$$

$$12 - 4 = 8$$

$$8 = 8 \quad \checkmark \quad \text{Good}$$

NO

$(6, 4)$ is NOT a solution

$$(6) + 2(4) = 9$$

$$6 + 8 = 9$$

$$14 \neq 9 \quad \checkmark \quad \text{BAD}$$

(31)

$$6x + y = 33$$

$$4x - y = 17$$

$$10x + 0 = 50$$

$$10x = 50$$

$$\frac{10x}{10} = \frac{50}{10}$$

$$x = 5$$

Subst $6x + y = 33$

$$6(5) + y = 33$$

$$30 + y = 33$$

$$30 + y - 30 = 33 - 30$$

$$y = 3$$

$$(x, y) = (5, 3)$$

(32)

$$P(x) = x^2 + x + 5 \quad P(7)$$

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

$$P(7) = (7)(7) + (7) + 5$$

$$P(7) = 49 + 7 + 5$$

$$P(7) = 56 + 5$$

$$P(7) = 61$$

33

$$(3y^2 + 6y - 8) - (-2y + 2) =$$

$$3y^2 + 6y - 8 + 2y - 2 =$$

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

34

$$(-8y^2 - 6y) + (7y^2 + 2y - 4) =$$

$$-8y^2 - 6y + 7y^2 + 2y - 4 =$$

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

OR

$$-y^2 - 4y - 4 =$$

35

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

$$x^2 + 6x + 4x + 24 =$$

$$x^2 + 10x + 24 =$$

36

$$(a+4)(a-7) =$$

$$a^2 - 7a + 4a - 28 =$$

$$a^2 - 3a - 28 =$$

$$(37) \quad (8y+1)^2 =$$

$$(8y+1)(8y+1) = \text{rewrite}$$

$$64y^2 + 8y + 8y + 1 =$$

$$64y^2 + 16y + 1 =$$

$$(38) \quad (2x+4)(5x+8) =$$

$$10x^2 + 16x + 20x + 32 =$$

$$10x^2 + 36x + 32 =$$

$$(39) \quad (x+4)(x^3-6x+5) =$$

$$x^4 - 6x^2 + 5x + 4x^3 - 24x + 20 =$$

$$x^4 + 4x^3 - 6x^2 - 19x + 20 =$$

$$(40) \quad (3a-9)(4a^2-7a-1) =$$

$$12a^3 - 21a^2 - 3a - 36a^2 + 63a + 9 =$$

$$12a^3 - 57a^2 + 60a + 9 =$$

(41)

$$(3u + v)(3u - v) =$$

$$9u^2 - 3uv + 3uv - v^2 =$$

$$9u^2 - v^2 =$$

(42)

$$(8x - 7)(2x + 9) =$$

$$16x^2 + 72x - 14x - 63 =$$

$$16x^2 + 58x - 63 =$$

(43)

$$\left(\frac{x^{-5} y^5}{x^2 y^7} \right)^3 =$$

$$\left(\frac{y^5}{x^2 x^5 y^7} \right)^3 =$$

$$\left(\frac{1}{x^{2+5} y^{7-5}} \right)^3 =$$

$$\left(\frac{1}{x^7 y^2} \right)^3 =$$

$$\left(\frac{(1)'}{x^7 y^2} \right)^3 =$$

$$\frac{(1)^{1(3)}}{x^{7(3)} y^{2(3)}} =$$

$$\frac{1^3}{x^{21} y^6} =$$

$$\frac{1 \cdot 1 \cdot 1}{x^{21} y^6} =$$

$$\frac{1}{x^{21} y^6} =$$

(44)

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

$$\frac{(-2)^1 x^1 y^{-3}}{(x^1 y^{-3})^{-3}} = \text{rewrite}$$

$$\frac{(-2)^{1(-5)} x^{1(-3)} y^{-3(-5)}}{x^{1(-3)} y^{-3(-3)}} = \text{mult power}$$

$$\frac{(-2)^{-5} x^{-3} y^{15}}{x^{-3} y^9} =$$

$$\frac{x^3 y^{15}}{x^3 y^9} = \text{rewrite}$$

$$(-2)^5 x^5 y^{15-9}$$

$$\frac{(-2)(-2)(-2)(-2)(-2) x^{5-3} y^6}{y^6} =$$

$$\frac{-32 x^2}{y^6} =$$

$$= \frac{-32 x^2}{y^6} =$$

(45) $(7x^2 + 11x + 10) \div (x+1)$

$$\begin{array}{r} x+1 \overline{) 7x^2 + 11x + 10} \\ \underline{-(7x^2 + 7x)} \\ 4x + 10 \end{array}$$

$$\begin{array}{r} 4x + 10 \\ \underline{-(4x + 4)} \\ 6 \end{array}$$

6 rem

Long division

$(7x^2 + 11x + 10) \div (x+1)$

$$\frac{7x^2 + 11x + 10}{x+1} =$$

$$\begin{array}{r} -1 \overline{) 7 \quad 11 \quad 10} \\ \underline{ -7 \quad -4} \end{array}$$

use synthetic division

7 4 6 rem

$$7x + 4 + \frac{6}{x+1}$$

(46)

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

35.1 Possible

7.5

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

$$\text{ck } (x+5)(x+7) =$$

$$x^2 + 7x + 5x + 35 =$$

$$x^2 + 12x + 35 = \checkmark \text{ Good}$$

(47)

$$x^2 - 2x - 63 = \text{factor}$$

Possible

63.1

21.3

7.9

$$(x+7)(x-9) =$$

$$\text{ck } (x+7)(x-9) =$$

$$x^2 - 9x + 7x - 63 =$$

$$x^2 - 2x - 63 = \checkmark \text{ Good}$$

(48) $49x^2 - 169y^2 =$

$$(7x)^2 - (13y)^2 =$$

$$(7x + 13y)(7x - 13y) =$$

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

(49)

Solve

$$(x-7)(x-6) = 0$$

$$\text{Let } x-7=0 \quad \text{OR} \quad x-6=0$$

$$x-\cancel{7}+\cancel{7}=0+7 \quad \text{OR} \quad x-\cancel{6}+\cancel{6}=0+6$$

$$x=7$$

OR

$$x=6$$

(50)

Solve

$$(2x+7)(8x-9) = 0$$

$$\text{Let } 2x+7=0 \quad \text{OR} \quad 8x-9=0$$

$$2x+\cancel{7}-\cancel{7}=0-7 \quad \text{OR} \quad 8x-\cancel{8}+\cancel{8}=0+9$$

$$2x=-7 \quad \text{OR} \quad 8x=9$$

$$\cancel{2}x = \frac{-7}{2} \quad \text{OR} \quad \frac{\cancel{8}x}{\cancel{8}} = \frac{9}{8}$$

$$x = \frac{-7}{2}$$

OR

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

51. $x^2 - 12x + 20 = 0$ Soln
 $(x - 2)(x - 10) = 0$

20-1 Possible
 10-2
 4-5

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

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

$x = 2$ OR $x = 10$

OR use Quadratic formula

$1x^2 - 12x + 20 = 0$

$a = 1, b = -12, c = 20$

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

$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(1)(20)}}{2(1)}$

$x = \frac{12 \pm \sqrt{144 - 80}}{2}$

$x = \frac{12 \pm \sqrt{64}}{2}$

$x = \frac{12 \pm 8}{2}$

$x = 6 \pm 4$

$x = 6 + 4$ OR $x = 6 - 4$

$x = 2$ OR $x = 10$