

MATH 0410 29 Free Response

1. $4.25x + 100 = 4.20x + 900$
2. $4(x + 1) = 2x + 4$
3. $4(x + 1) = 4x + 9$
4. $4(x + 1) = 4 + 4x$
5. $4(x + 1) = 2x + 7$
6. $\frac{x}{5} + 2 = \frac{x}{4} - 3$
7. Evaluate $A = P + PRT$, $P = 51000$, $R = 8.5\%$, $T = 5$
8. Evaluate $T = P - PD$, $P = 51000$, $D = 95\%$
9. $-2x + 6y = -40$, Solve for x
10. $8x - 2y = -10$, Solve for y
11. $\frac{7}{24} - \frac{5}{36}$
12. $(-24000 - 6000) \div 60 - 80$
13. Is $(1000, 500)$ a solution of $2x + 3y = 3500$?
14. Find the slope $(-8, -16)$ and $(-2, -4)$
15. Find the slope $(-10, -5)$ and $(-60, -30)$
16. Find equation of line $m = 50$ and point $= (10, 1100)$
17. $2x + 280 \leq 8x - 4x + 180$
18. Find slope and y -intercept $-4000x + 2y = 8000$
19. Graph $y = -2x + 10$
20. Graph $5x + 2y = 4$
21. $\frac{40x^4y^{-7}z^{-11}}{14x^{-2}y^{-10}z^{-11}}$
22. $\left(\frac{2x^4y^7z^{20}}{m}\right)^4$
23. $(2x - 3)(4x - 5)$
24. $(2x + 5)(2x - 5)$
25. $(2x - 5)(2x - 5)$
26. $(4x - 7)^2$
27. $(2x - 5)(x^2 - 6x - 10)$
28. $(-4x^2 - 9x + 5) - (-2x^2 - 11x + 10)$
29. $\frac{2x^2 + 3x - 11}{x - 1}$

① $4.25x + 100 = 4.20x + 900$

$4.25x + 100 - 100 = 4.20x + 900 - 100$

$4.25x = 4.20x + 800$

$4.25x - 4.20x = 4.20x + 800 - 4.20x$

$0.05x = 800$

$$\frac{0.05x}{0.05} = \frac{800}{0.05}$$

$x = 16,000$

$$\textcircled{2} \quad 4(x+1) = 2x + 4$$

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

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

$$4x = 2x$$

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

$$2x = 0$$

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

$$x = 0$$

③

$$f(x+1) = 4x + 9$$

$$4x + 4 = 4x + 9$$

$$4x + 4 - 4 = 4x + 9 - 4$$

$$4x = 4x + 5$$

$$4x - 4x = \cancel{4x} + 5 - 4x$$

$$0 \neq 5$$

③

No solution

or \emptyset or $\{\}$

(4)

$$4(x+1) = 4 + 4x$$

$$4x + 4 = 4 + 4x$$

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

$$4x = 4x$$

$$4x - 4x = 4x - 4x$$

$$0 = 0$$

(4)

Infinite number of solutions

OR

All real numbers

5.

$$4(x+1) = 2x+7$$

$$4x+4 = 2x+7$$

$$4x+4-4 = 2x+7-4$$

$$4x = 2x+3$$

$$4x-2x = \cancel{2x}+3-\cancel{2x}$$

$$2x = 3$$

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

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

6.

(6)

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

$$\frac{x}{5} + \frac{2}{1} = \frac{x}{4} - \frac{3}{1}$$

$$\frac{x}{5}(20) + \frac{2}{1}(20) = \frac{x}{4}(20) - \frac{3}{1}(20)$$

$$x(4) + 2(20) = x(5) - 3(20)$$

$$4x + 40 = 5x - 60$$

$$4x + \cancel{40} - \cancel{40} = 5x - 60 - 40$$

$$4x = 5x - 100$$

$$4x - 5x = \cancel{5x} - 100 - \cancel{5x}$$

$$-1x = -100$$

$$\frac{-1x}{-1} = \frac{-100}{-1}$$

$$x = 100$$

Mult by
LCD = 20

(6)

⑦ Eval

$$A = P + PRT \text{ if } P = \$1000, R = 8.5\%, T = 5$$

$$A = \$1000 + \$1000(0.085)(5)$$

$$A = \$1000 + \$1000(0.425)$$

$$A = \$1000 + \$21675$$

$$\underline{\quad A = \$72,675 \quad}$$

⑦

⑧ Evcl

$$T = P - PD \text{ if } P = \$5,000, D = 95\%$$

$$T = 51000 - \$51000 (.95)$$

$$T = \$51000 - \$48450$$

$$\boxed{T = \$2550}$$

⑧

(9)

Solve for X

(9)

$$-2x + 6y = -40$$

$$\cancel{-2x + 6y} - 6y = \cancel{-40} - 6y$$

$$-2x = -40 - 6y$$

$$\frac{-2x}{-2} = \frac{-40}{-2} - \frac{6y}{-2}$$

$$x = 20 + 3y$$

OR

$$x = 3y + 20$$

Rewrite

⑩.

Solve for y

⑩.

$$8x - 2y = -10$$

$$\cancel{8x} - 2y - \cancel{8x} = -10 - 8x$$

$$-2y = -10 - 8x$$

$$\frac{-2y}{-2} = \frac{-10}{-2} - \frac{8x}{-2}$$

$$y = 5 + 4x$$

OR

$$y = 4x + 5 \quad \text{Rewrite}$$

11.

$$\frac{7}{24} - \frac{5}{36} =$$

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

$$\begin{array}{r} 2 \\ | \quad 24 \\ 2 \quad | \quad 12 \\ 2 \quad | \quad 6 \\ 3 \quad | \quad 3 \\ \hline 1 \end{array}$$

11.

$$\frac{7}{24} \left(\frac{3}{3} \right) - \frac{5}{36} \left(\frac{2}{2} \right) =$$

$$\frac{21}{72} - \frac{10}{72} =$$

$$\frac{21 - 10}{72} =$$

$$\frac{11}{72} =$$

$$\begin{array}{r} 2 \\ | \quad 36 \\ 2 \quad | \quad 18 \\ 3 \quad | \quad 9 \\ 3 \quad | \quad 3 \\ \hline 1 \end{array}$$

most

$$24 = (2 \cdot 2 \cdot 2) \cdot 3$$

$$36 = 2 \cdot 2 \cdot (3 \cdot 3)$$

$$\text{LCD} = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$$

$$= 72$$

(12.)

$$(-\$24,000 - \$6,000) \div 60 - \$80 =$$

(12)

$$(-\$30,000) \div 60 - \$80 =$$

$$-\$500 - \$80 =$$

$$-\$580 =$$

(13.) Is $(1000, 500)$ a solution to
the equation.

$$2x + 3y = 3500$$

$$2(1000) + 3(500) = 3500 ?$$

$$2000 + 1500 = 3500 ?$$

$$3500 = 3500 \quad \checkmark$$

YES

it is a solution

(14) Find the slope of the line through
the points $(-8, -16)$ and $(-2, -4)$

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

$$m = \frac{(-16) - (-4)}{(-8) - (-2)}$$

$$m = \frac{-16 + 4}{-8 + 2}$$

$$m = \frac{-12}{-6}$$

$$m = 2$$

(14)

(15.) Find the slope of the line through
the two points $(-10, -5)$ and $(-60, -30)$

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

$$m = \frac{(-5) - (-30)}{(-10) - (-60)}$$

$$m = \frac{-5 + 30}{-10 + 60}$$

$$m = \frac{25}{50}$$

~~$m = \frac{25(1)}{25(2)}$~~

$$m = \frac{25(1)}{25(2)}$$

$$m = \frac{1}{2}$$

(15.)

(16) Find the equation of the line with
slope $m = 50$ at point $(10, 1100)$

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

$$y - 1100 = 50(x - 10)$$

$$y - 1100 = 50(x - 10)$$

$$y - 1100 = 50x - 500$$

$$y - 1100 + 1100 = 50x - 500 + 1100$$

$$y = 50x + 600$$

(17.)

Some

$$2x + 280 \leq 8x - 4x + 180 \quad (n)$$

$$2x + 280 \leq 4x + 180$$

$$2x + 280 - 280 \leq 4x + 180 - 280$$

$$2x \leq 4x - 100$$

$$2x - 4x \leq 4x - 100 - 4x$$

$$-2x \leq -100$$

$$\frac{-2x}{-2} \geq \frac{100}{-2}$$

divide by a negative,
and flip the
alligator around

$$x \geq 50$$



$$[50, \infty)$$

(18.) Find the slope at y-intercept (18.)

$$-4000x + 2y = 8000$$

$$-4000x + 2y + 4000x = 8000 + 4000x$$

$$2y = 8000 + 4000x$$

$$\cancel{2}y = \frac{8000}{2} + \frac{4000x}{2}$$

$$y = 4000 + 2000x$$

$$y = 2000x + 4000$$



$$y = mx + b$$

Slope

y-intercept

$$\text{Slope} = m = 2000$$

$$\text{y-intercept} = (0, 4000)$$

(19)

Graph

$$y = -2x + 10$$

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

$$y = 0 + 10$$

$$y = 10$$

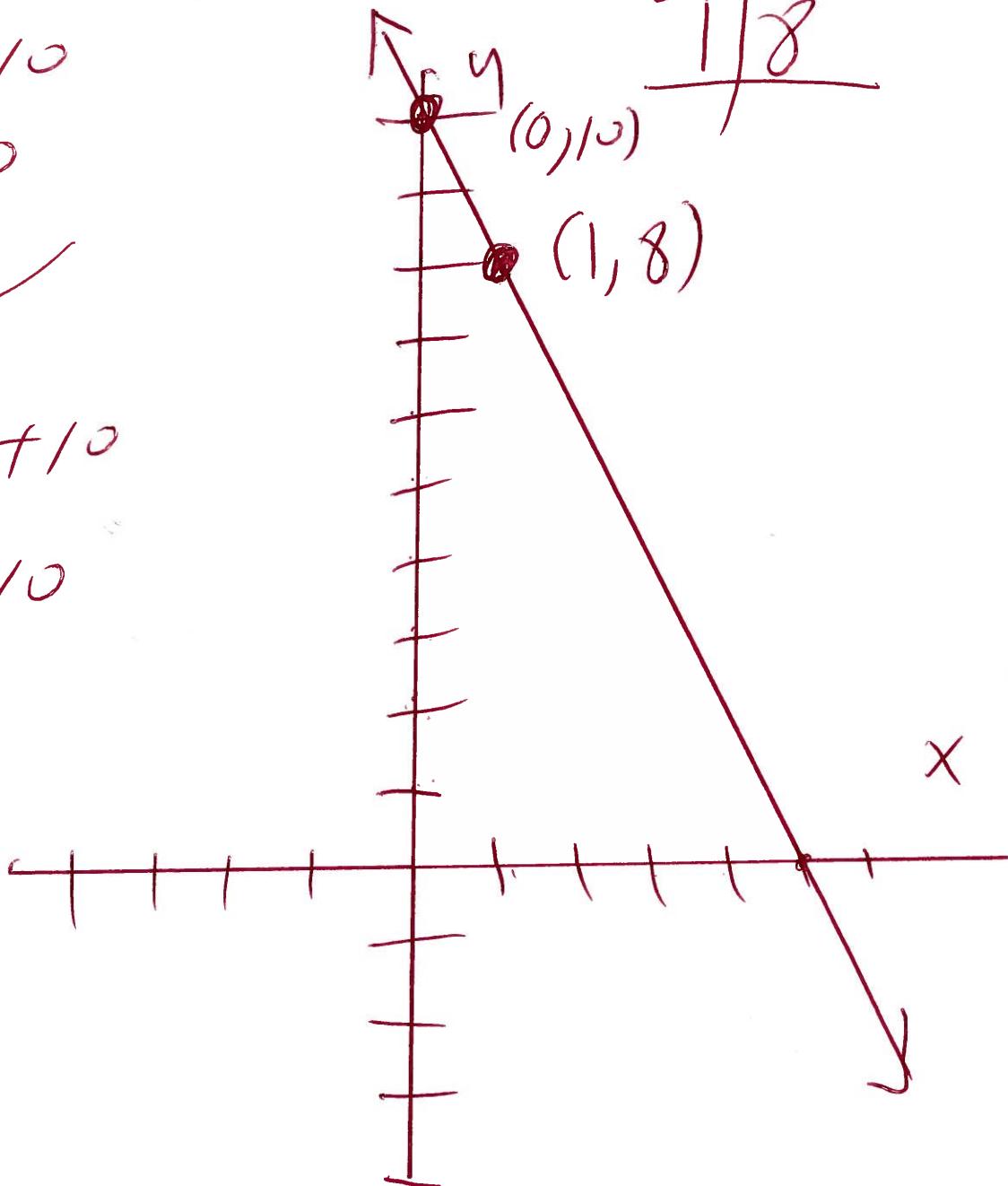
$$y = -2(1) + 10$$

$$y = -2 + 10$$

$$y = 8$$

(19)

$$\begin{array}{r|l} x & y \\ \hline 0 & 10 \\ 1 & 8 \end{array}$$



(20) graph $5x + 2y = 4$

(20.)

$$5x + 2y = 4$$

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

$$2y = 4 - 5x$$

$$\frac{2y}{2} = \frac{4}{2} - \frac{5x}{2}$$

$$y = 2 - \frac{5}{2}x$$

$$y = -\frac{5}{2}x + 2 \quad \text{key w-16}$$

$$y = -\frac{5}{2}(0) + 2$$

$$y = 0 + 2$$

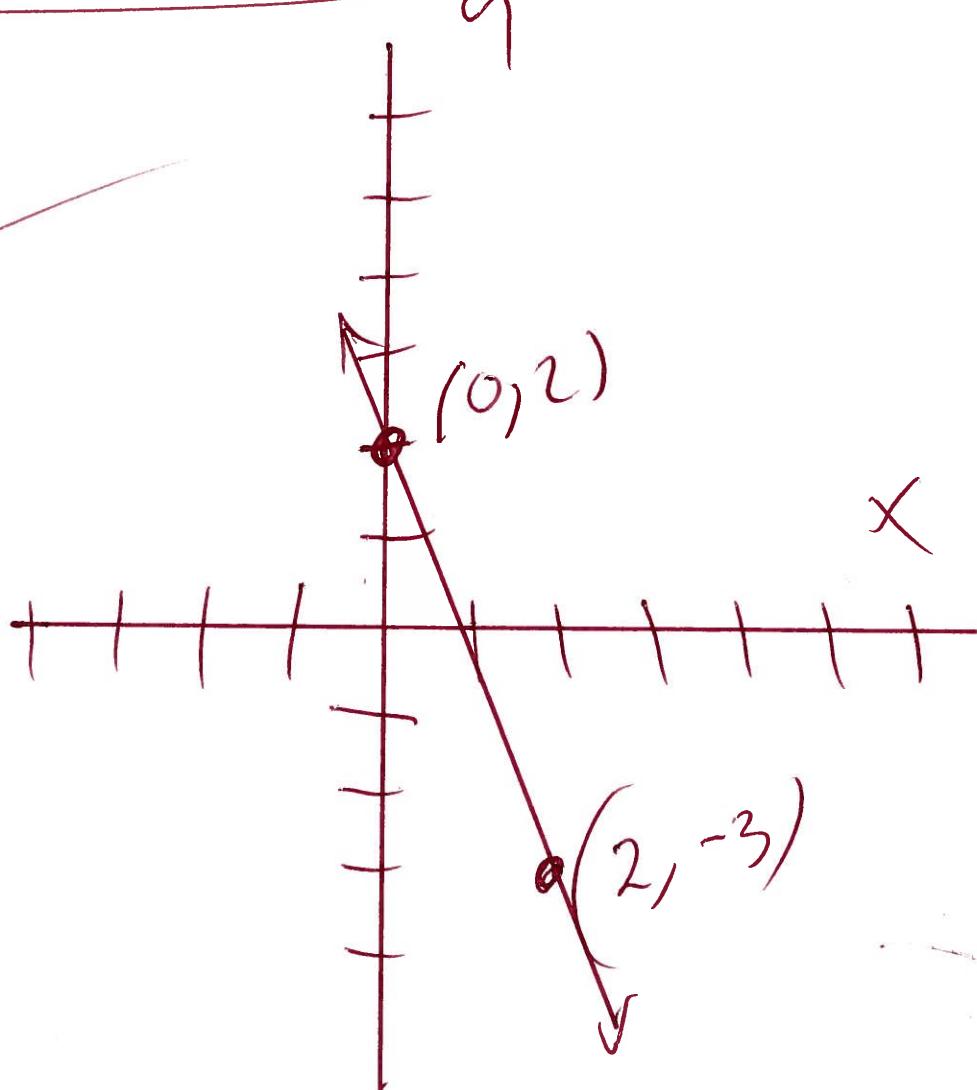
$$y = 2$$

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

$$y = -5 + 2$$

$$y = -3$$

X	y
0	2
2	-3



21.

$$\frac{40x^4y^{-7}z^{-11}}{14x^{-2}y^{-10}z^{-11}} =$$

21.

$$\frac{40 \cancel{x}^4 \cancel{x}^2 \cancel{y}^{10} \cancel{z}^{11}}{14 \cancel{y}^7 \cancel{z}^{11}} =$$

Change to positive powers

$$\frac{2(20)x^{4+2}y^{10-7}}{2(7)} =$$

use Law of exponents

$$\frac{20x^2y^3}{7}$$

22

$$\left(\frac{2x^4y^7z^{20}}{m} \right)^4 =$$

22

$$\left(\frac{2^1 x^4 y^7 z^{20}}{m^1} \right)^4 = \text{Rewrite}$$

$$\frac{2^{1(4)} x^{4(4)} y^{7(4)} z^{20(4)}}{m^{1(4)}} =$$

$$\frac{2^4 x^{16} y^{28} z^{80}}{m^4} =$$

$$\frac{2 \cdot 2 \cdot 2 \cdot 2 x^{16} y^{28} z^{80}}{m^4} =$$

$$\frac{16 x^{16} y^{28} z^{80}}{m^4} =$$

23.

$$(2x-3)(4x-5) =$$
$$8x^2 - 10x - 12x + 15 =$$

23r

$$8x^2 - 22x + 15 =$$

(28)

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

(29)

$$4x^2 - 10x + 10x - 25 =$$

$$4x^2 - 25 =$$

(25.)

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

(25)

$$4x^2 - 10x - 10x + 25 =$$

$$4x^2 - 20x + 25 =$$

(26) $(4x-7)^2 =$

$(4x-7)(4x-7) =$

$16x^2 - 28x - 28x + 49 =$

$16x^2 - 56x + 49 =$

(27)

$$(2x-5)(x^2-6x-10) =$$

$$2x^3 - 12x^2 - 20x - 5x^2 + 30x + 50 =$$

$$2x^3 - 17x^2 + 10x + 50 =$$

(27)

(28.) $(-4x^2 - 9x + 5) - (-2x^2 - 11x + 10) =$

~~$\cancel{-4x^2}$~~ $\check{-9x} + 5 + \cancel{-2x^2} \check{-11x} + 10 =$

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

29.

$$\frac{2x^2 + 3x - 11}{x-1}$$

use long division

OR

long division

$$\begin{array}{r} x-1 \\ \overline{)2x^2 + 3x - 11} \\ - (2x^2 - 2x) \\ \hline 5x - 11 \end{array}$$

$$2x + 5 - \frac{6}{x-1}$$

$$\begin{array}{r} 5x - 11 \\ - (5x - 5) \\ \hline -6 \text{ Rem} \end{array}$$

$$\frac{2x^2 + 3x - 11}{x-1}$$

use synthetic division

OR

$$\begin{array}{r} | 2 \quad 3 \quad -11 \\ \quad 2 \quad 5 \\ \hline 2 \quad 5 \quad -6 \text{ Rem} \end{array}$$

$$2x + 5 + \frac{-6}{x-1}$$

OR

$$2x + 5 - \frac{6}{x-1}$$