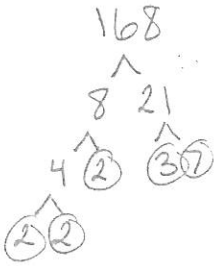
Math 10 Foundations Final Review

*Does not include level 4 questions. Does not include outcomes 3a and 3b

Outcomes 1A

Level 2

1. Write the prime factorization of 168

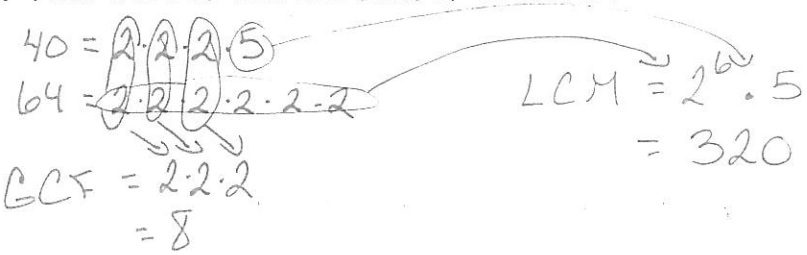


$168 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 7$

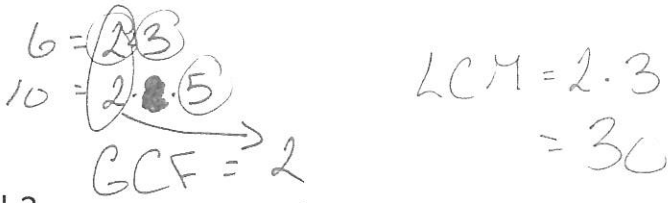
OR

$= 2^3 \cdot 3 \cdot 7$

2. Find the GCF and the LCM of 40 and 64



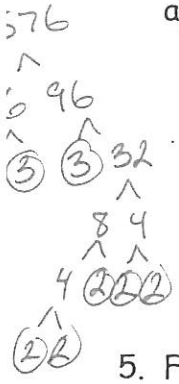
3. Find the GCF and LCM of 6 and 10



Level 3

4. Find the square root (without using the $\sqrt{\ }$ button on your calculator). Show your work.

a) 576

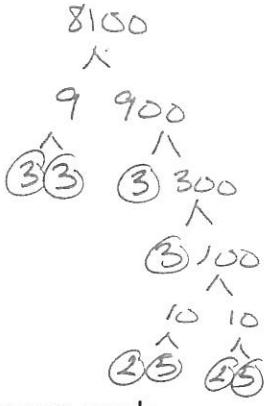


$\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$

$= 2 \cdot 2 \cdot 2 \cdot 3$

$= 24$

b) 8100



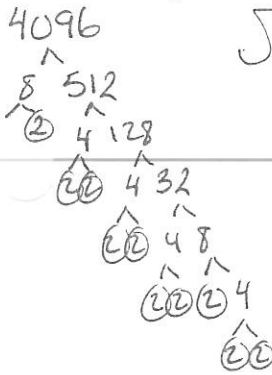
$\sqrt{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 5 \cdot 5}$

$= 2 \cdot 3 \cdot 3 \cdot 5$

$= 90$

5. Find the cube root (without using the $\sqrt[3]{\ }$ button on your calculator). Show your work.

a) 4096

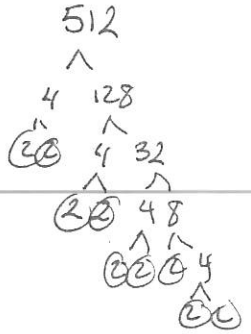


$\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}$

$= 2 \cdot 2 \cdot 2 \cdot 2$

$= 16$

b) 512



$\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}$

$= 2 \cdot 2 \cdot 2$

$= 8$

Outcome 2a
Level 2/3

6. Write each mixed radical as an entire radical

a) $12\sqrt{3}$

$= \sqrt{12 \cdot 12 \cdot 3}$

$= \sqrt{432}$

b) $3\sqrt[3]{7}$

$= \sqrt[3]{3 \cdot 3 \cdot 3 \cdot 7}$

$= \sqrt[3]{189}$

c) $2\sqrt[5]{15}$

$= \sqrt[5]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 15}$

$= \sqrt[5]{480}$

7. Write each as a mixed radical in simplest form.

a) $\sqrt{45}$

$= \sqrt{9} \cdot \sqrt{5}$

$= 3\sqrt{5}$

b) $\sqrt[3]{128}$

$= \sqrt[3]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}$

$= 2 \cdot 2\sqrt{2}$

$= 4\sqrt{2}$

c) $\sqrt{539}$

$= \sqrt{7 \cdot 7 \cdot 11}$

$= 7\sqrt{11}$

d) $\sqrt{80}$

$= \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$

$= 2 \cdot 2\sqrt{5}$

$= 4\sqrt{5}$

e) $\sqrt{75}$

$= \sqrt{25} \cdot \sqrt{5}$

$= 5\sqrt{5}$

d) $\sqrt[3]{108}$

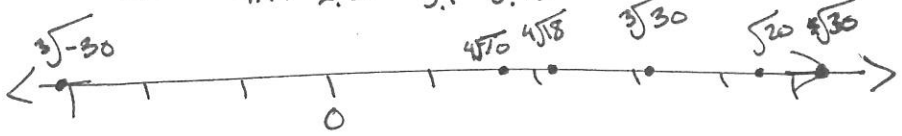
$= \sqrt[3]{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3}$

$= 3\sqrt[3]{4}$

8. Place each number on a number line, and then order the numbers from least to greatest.

$\sqrt[3]{30}, \sqrt{20}, \sqrt[4]{18}, \sqrt[3]{-30}, \sqrt{30}, \sqrt[4]{10}$

3.107 4.47 2.06 -3.1 5.48 1.78



9. Determine if the following are rational or irrational. Explain how you know.

a) $\sqrt{26}$

$= \sqrt{2 \cdot 13}$

$= \sqrt{26}$

Irrational

b) $\sqrt[3]{81}$

$= \sqrt[3]{3 \cdot 3 \cdot 3 \cdot 3}$

$= 3\sqrt[3]{3}$

Irrational

Outcome 2b

Level 2

10. Rewrite the following with positive exponents only

a) x^{-3} $= \frac{1}{x^3}$

b) $\frac{1}{d^{-4}}$ $= d^4$

c) $\left(\frac{a}{b}\right)^{-2}$ $= \frac{a^{-2}}{b^{-2}} = \frac{b^2}{a^2}$ or $\left(\frac{b}{a}\right)^2$

11. Rewrite the following as a radical. Do not evaluate

a) $(-8)^{\frac{5}{3}}$ $= \left(\sqrt[3]{-8}\right)^5$

b) $48^{\frac{1}{2}}$ $= \sqrt{48}$

c) $25^{\frac{3}{4}}$ $= \sqrt[4]{25^3}$ $\left(\sqrt[4]{25}\right)^3$

d) $7^{-\frac{1}{3}}$ $= \frac{1}{7^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{7}}$

12. Rewrite the following as an exponent. Do not evaluate

a) $\sqrt[3]{4}$ $= 4^{\frac{1}{3}}$

b) $\left(\sqrt{5}\right)^3$ $= 5^{\frac{3}{2}}$

c) $\sqrt[4]{x^3}$ $= x^{\frac{3}{4}}$

13. Write as a single power.

a) y^3y^2 $= y^5$

b) $\frac{a^6}{a^2}$ $= a^4$

c) $(d^7)^2$ $= d^{14}$

14. Evaluate the following. NO DECIMAL ANSWERS

a) 3^{-2} $= \frac{1}{3^2} = \frac{1}{9}$

b) 4^{-3} $= \frac{1}{4^3} = \frac{1}{64}$

level 3

c) $(27)^{\frac{2}{3}}$ $= \left(\sqrt[3]{27}\right)^2$ $= 3^2$ $= 9$

d) $27^{-\frac{1}{3}}$ $= \frac{1}{27^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{27}}$ $= \frac{1}{3}$

15. Simplify the following with positive exponents only.

a) $m^{-7} \times m^{3}$

$= m^{-4}$

$= \frac{1}{m^4}$

b) $\frac{a^3}{a^{-8}}$

$= a^{11}$

c) $(x^2y^{-3})^4$

$= x^{8}y^{-12}$

$= \frac{x^8}{y^{12}}$

d) $(a^3b)(a^{-1}b^4)$

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

e) $\frac{x^2y}{x^3y^{-2}}$

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

f) $\left(\frac{x^2y}{y^{-2}}\right)^{-2}$

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

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

$= \frac{1}{x^4y^6}$

g) $(3m^4n)^2$

$= 3^2m^8n^2$

$= 9m^8n^2$

h) $(m^2n^{-4})^{-2}$

$= m^{-4}n^{8}$

$= \frac{n^8}{m^4}$

g) $\left(g^{\frac{2}{3}}h^{\frac{-3}{4}}\right)\left(g^{\frac{1}{4}}h^{\frac{1}{2}}\right)$

$= g^{\frac{11}{12}}h^{-\frac{1}{4}}$

$= \frac{g^{\frac{11}{12}}}{h^{\frac{1}{4}}}$

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

$= x^{\frac{-4}{15}}$

$= \frac{1}{x^{\frac{4}{15}}}$

i) $\left(\frac{4x^{\frac{3}{4}}}{9x^3}\right)^{-\frac{1}{2}}$

$= \frac{4^{-\frac{1}{2}}x^{-\frac{3}{8}}}{9^{-\frac{1}{2}}x^{-\frac{3}{2}}}$

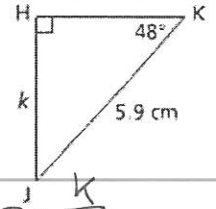
$= \frac{9^{\frac{1}{2}}x^{\frac{3}{2}}}{4^{\frac{1}{2}}x^{\frac{3}{8}}} = \frac{3x^{\frac{3}{2}}}{2x^{\frac{3}{8}}}$

Outcome 4

level 2/3

16. Determine the indicated measurement

a)

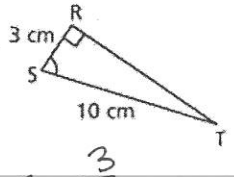


$\sin 48 = \frac{K}{5.9}$

$K = (\sin 48)(5.9)$

$K = 4.38\text{cm}$

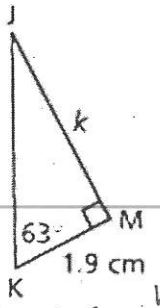
b)



$\cos S = \frac{3}{10}$

$S = 72.5°$

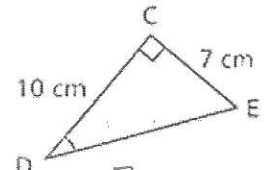
c)



$\tan 63 = \frac{K}{1.9}$

$K = (\tan 63)(1.9)$

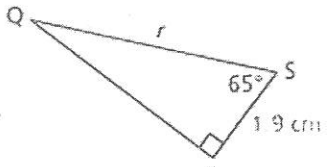
d)



$\tan D = \frac{7}{10}$

$D = 35°$

e)



$\cos 65 = \frac{1.9}{r}$

$1.9 = (\cos 65)(r)$

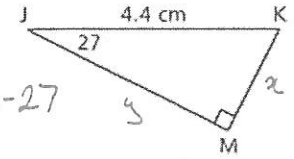
$\frac{1.9}{\cos 65} = \frac{(\cos 65)(r)}{\cos 65}$

$r = 4.5\text{cm}$

Level 4

17. Solve the triangle

a)



$\angle K = 180 - 90 - 27$

$= 63°$

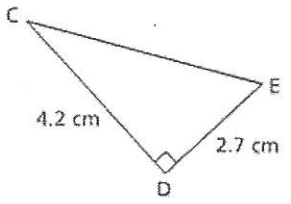
$KM \Rightarrow \sin 27 = \frac{x}{4.4}$

$x = 2.0\text{cm}$

$JM \Rightarrow \cos 27 = \frac{y}{4.4}$

$y = 3.9\text{cm}$

b)



$CE \Rightarrow 4.2^2 + 2.7^2 = c^2$

$17.64 + 7.29 = c^2$

$24.93 = c^2$

$c = 4.99\text{cm}$

$\angle C \Rightarrow \tan C = \frac{2.7}{4.2}$

$C = 32.7°$

$\angle E \Rightarrow 180 - 90 - 32.7$

$= 57.3°$

Outcome 5A

18. Expand and Simplify

a) $(9 + m)(9 + m)$

$= 81 + 9m + 9m + m^2$

$= 81 + 18m + m^2$

b) $(3a - 5)(2a - 3)$

$= 6a^2 - 9a - 10a + 15$

$= 6a^2 - 19a + 15$

c) $(2n + 3p)(5n - 4p)$

$= 10n^2 - 8np + 15np - 12p^2$

$= 10n^2 + 7np - 12p^2$

d) $(w + 4)(-2w^2 + 7w - 8)$

$= -2w^3 + 7w^2 - 8w - 8w^2 + 28w - 32$

$= -2w^3 - w^2 + 20w - 32$

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

$= -8 + 8x + 12x^2 - 6x + 6x^2 + 9x^3 + 4x^2 - 4x^3 - 6x^4$

$= -6x^4 + 5x^3 + 22x^2 + 2x - 8$

f) $(2m + 3n - 5)(3m - 4n)$

$= 6m^2 - 8mn + 9mn - 12n^2 - 15m + 20n$

$= 6m^2 - 12n^2 + mn - 15m + 20n$

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

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

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

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

Outcome 5b

19. Factor the following

Factor by removing the gcf

a) $14a^3b^2 - 28b^3c^2 + 21a^2c^3$

$7a(2a^3b^2 - 4b^3c^2 + 3a^2c^3)$

Factor the following. Remember to always remove the gcf first if possible

b) $n^2 - n - 12$

$(n + 3)(n - 4)$

c) $36r^2 - 64m^2$

$= 4(9r^2 - 16m^2)$

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

d) $6m^2 + 23m - 18$

$= (2m + 9)(3m - 2)$

$2 \cdot 9 = +27$

$3 \cdot -2 = -4$

e) $w^2 - 22wx + 121x^2$

$= (w - 11x)(w - 11x)$

f) $8m - 4m^2$

$= 4m(2 - m)$

g) $-24m^2n - 6mn^2$

$= -6mn(4m + n)$

h) $x^2 + 8x + 12$

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

i) $q^2 + 6q + 8$

$= (q + 4)(q + 2)$

j) $u^2 - 12u + 27$

$= (u - 9)(u - 3)$

k) $6m^2 + 5m - 21$

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

2 -3 -9
3 +7 +14

l) $16v^2 - 49$

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

m) $9y^2 - 25x^2$

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

n) $x^2 - 5x$

$= x(x - 5)$

o) $2w^2 + 3w - 20$

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

1 +4 +8
2 -5 -5

p) $5w^2 + 15w + 10$

$= 5(w^2 + 3w + 2)$

$= 5(w + 1)(w + 2)$

2 -5 -15
3 +4 +2

q) $6x^2 - 13xy - 5y^2$

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

r) $3x^2 - 14x + 8$

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

1 -4 -12
3 -2 -2

s) $16x^4 - 1$

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

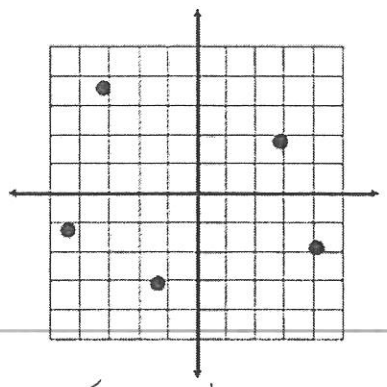
$= (4x^2 + 1)(2x + 1)(2x - 1)$

Outcomes 6

Level 2

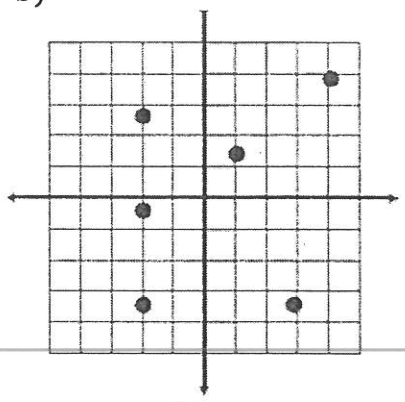
20. Determine if each relation below is a function.

a)



Function

b)



Not a Function

c)

x	y
8	-3
7	-3
6	-3
5	-3
4	-3

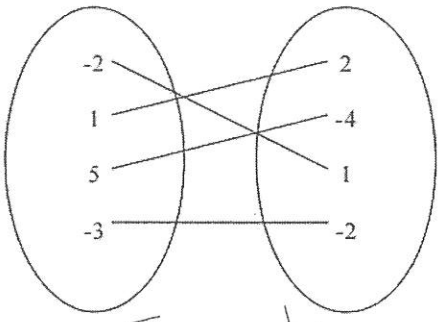
Function

d)

x	y
-2	7
6	4
-1	-2
-2	3

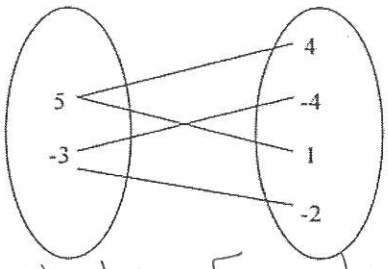
Not a function

e)



Function

f)



Not a function

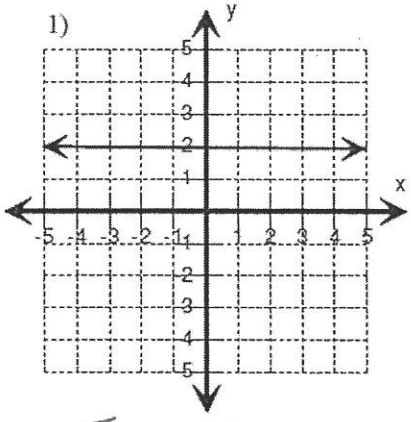
g) {(1, 3), (1, 5), (2, 7), (2, 9)}

Not a Function

h) {(1, 5), (3, 5), (4, 6), (9, 0)}

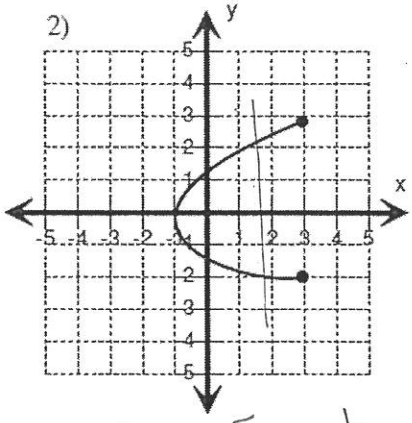
Function

i)



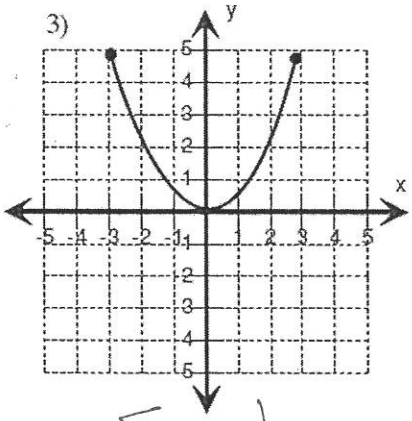
Function

j)



Not a Function

k)



Function.

level2/3

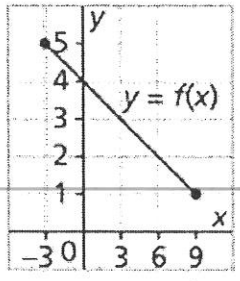
21. State the Domain & Range of the following:

a) {(1, 3), (2, 5), (3, 7), (4, 7)}

$D = \{1, 2, 3, 4\}$

$R = \{3, 5, 7\}$

b)



$D = [-3, 9]$ or $\{x \mid -3 \leq x \leq 9, x \in$

$R = [1, 5]$ or $\{y \mid 1 \leq y \leq 5, y \in R\}$

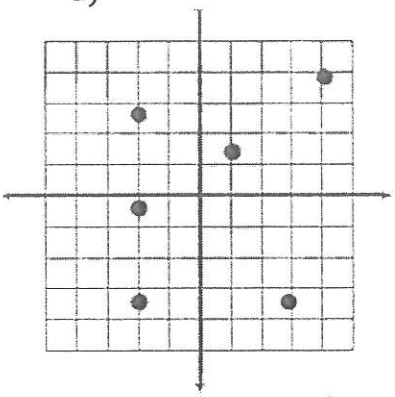
b)

x	y
-2	7
6	4
-1	-2
-2	3

$D = \{-2, -1, 6\}$

$R = \{-2, 3, 4, 7\}$

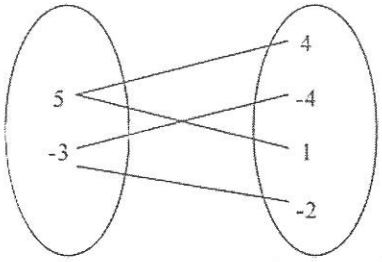
d)



$D = \{-2, 1, 3, 4\}$

$R = \{-3.5, -0.5, 1.5, 2.5, 4\}$

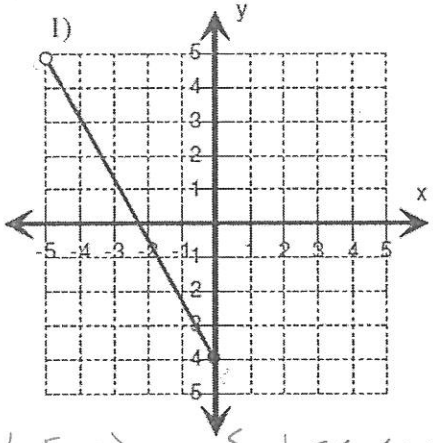
e)



$D = \{-3, 5\}$

$R = \{-4, -2, 1, 4\}$

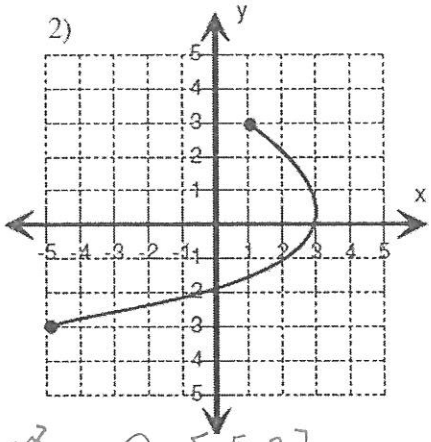
f)



$D = (-5, 0)$ or $\{x \mid -5 < x \leq 0, x \in R\}$

$R = [-4, 5)$ or $\{y \mid -4 \leq y < 5, y \in R\}$

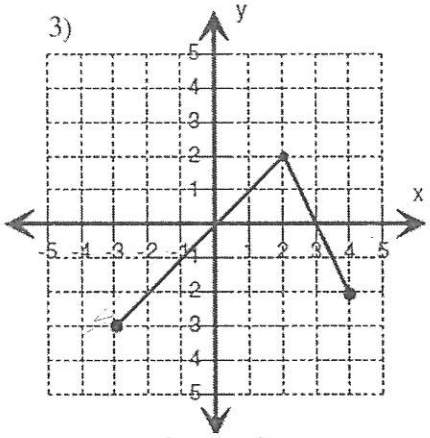
g)



$D = [-5, 3]$
or
$\{x \mid -5 \leq x \leq 3, x \in R\}$

$R = [-3, 3]$
$\{y \mid -3 \leq y \leq 3, y \in R\}$

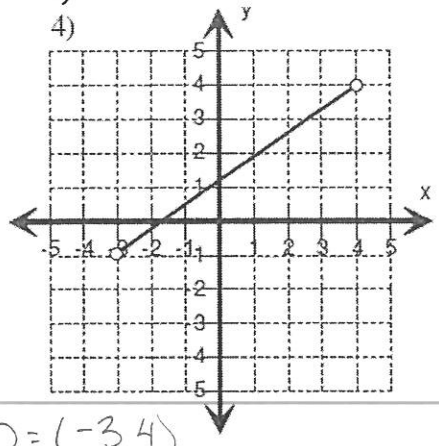
h)



$D = [-3, 4]$
OR
$\{x \mid -3 \leq x \leq 4, x \in R\}$

$R = [-3, 2]$
OR
$\{y \mid -3 \leq y \leq 2, y \in R\}$

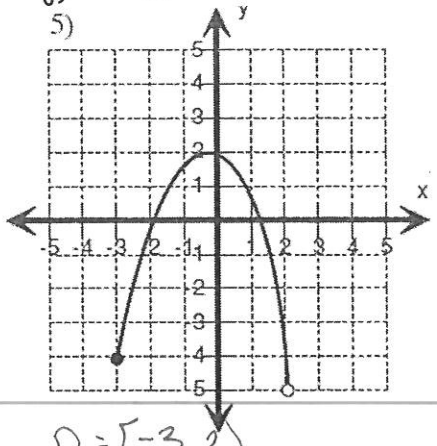
i)



$D = (-3, 4)$
or
$\{x \mid -3 < x < 4, x \in R\}$

$R = (-1, 4)$
$\{y \mid -1 < y < 4, y \in R\}$

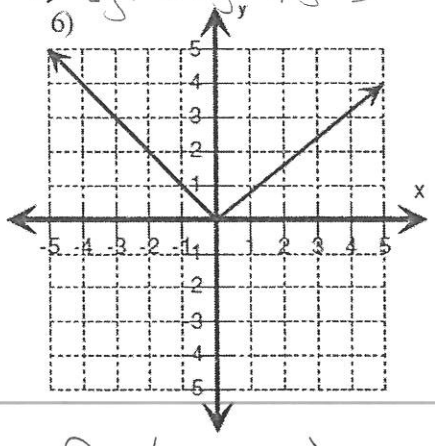
j)



$D = [-3, 2)$
$\{x \mid -3 \leq x < 2, x \in R\}$

$R = (-5, 2]$
$\{y \mid -5 < y \leq 2, y \in R\}$

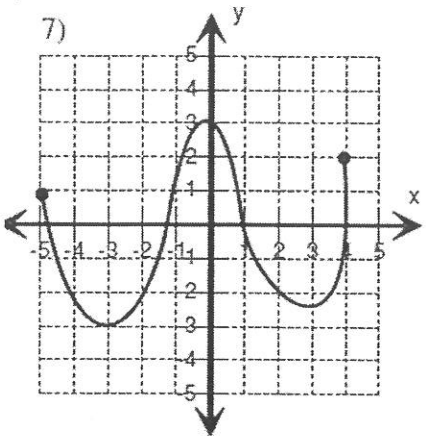
k)



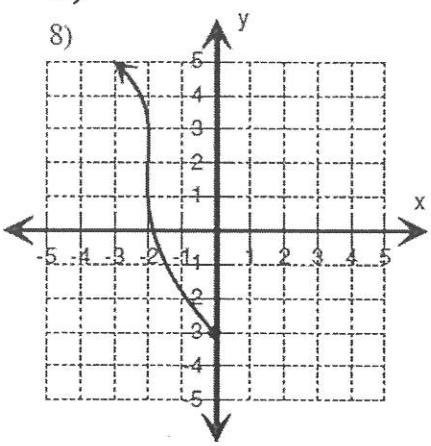
$D = (-\infty, \infty)$
$\{x \in R\}$

$R = [0, \infty)$
$\{y \mid y \geq 0, y \in R\}$

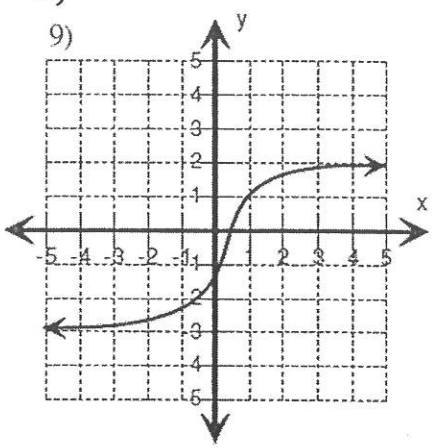
l)



m)



n)



Outcome7

22. Determine the slope of a line for each equation

a) $y = -2x + 7$ $m = -2$

b) $y + 7 = 3(x - 8)$ $m = 3$

c) $y = 9 - 5x$ $m = -5$

d) $y = x$ $m = 1$

23. A line has slope $\frac{3}{5}$

a) What is the slope of a line that is parallel to this one?

$\frac{3}{5}$

b) What is the slope of a line that is perpendicular to this one?

$-\frac{5}{3}$

24. A line has a slope of -4.

c) What is the slope of a line that is parallel to this one?

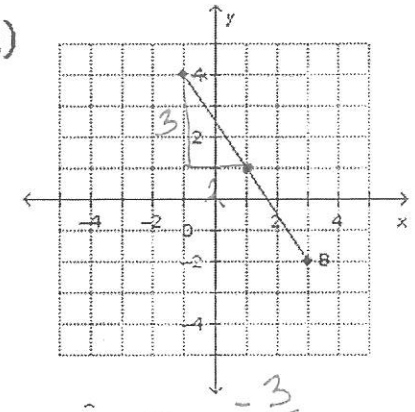
-4

d) What is the slope of a line that is perpendicular to this one?

$\frac{1}{4}$

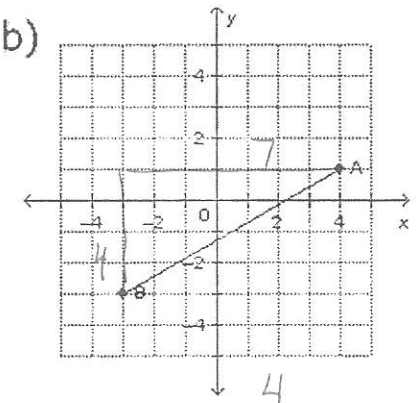
25. Determine the slope from the following graphs.

a)



$m = \frac{-3}{2}$

b)



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

Level 3

26. Determine the slope of a line that passes through the following points.

a) (-6, 8) and (-1, -2)

$m = \frac{-2-8}{-1-6}$

$= \frac{-10}{5}$

$= -2$

b) (-3, 7) and (5, -5)

$m = \frac{-5-7}{5--3}$

$= \frac{-12}{8}$

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

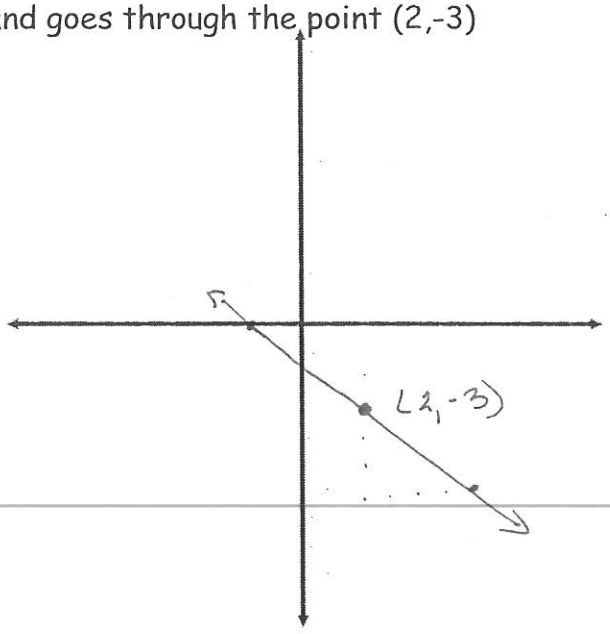
27. The equations of two lines are given. Are the two lines parallel, perpendicular or neither? Explain your reasoning.

a) $y = -3x + 6$ $\quad y = \frac{1}{3}x - 20$

Perpendicular $\quad m = -3 \quad m = \frac{1}{3}$

Negative Reciprocals

28. Draw a line segment that has a slope of $\frac{-3}{4}$ and goes through the point (2,-3)



Outcome 8a

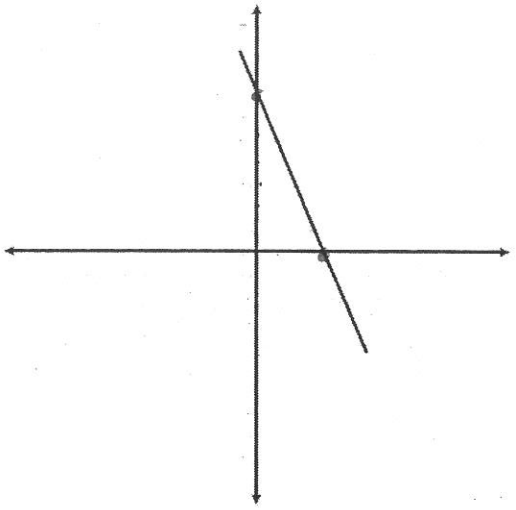
Level 2

29. State whether the following represent a linear relation.

a) $2x + 3y = 7$ b)$\{(2,7), (4,10), (6,13), (8,16)\}$ c) $x = -4$

Yes Yes Yes

30. What are the coordinates of the:



x intercept: (3, 0)

y intercept: (7, 0)

Level 3

31. If $g(x) = 2x - 4$, determine:

a) g(-1)

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

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

$g(-1) = -6$

b) x if g(x) = 2

$2 = 2x - 4$

$6 = 2x$

$x = 3$

32. Calculate the x and y intercepts for each of the equations:

a) $2x - 5y = 20$

x-int

$2x - 5(0) = 20$

$2x = 20$

$x = 10$

y-int

$2(0) - 5y = 20$

$-5y = 20$

$y = -4$

2) $7y + 4x + 56 = 0$

x-int

$7(0) + 4x + 56 = 0$

$4x = -56$

$x = -14$

y-int

$7y + 4(0) + 56 = 0$

$7y = -56$

$y = -8$

Outcome 8b

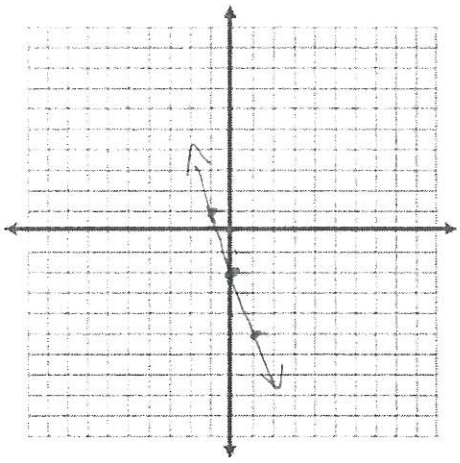
Level 3

33. Graph the following equations

a) $y = -3x - 2$

$m = -\frac{3}{1}$

y-int $= -2$

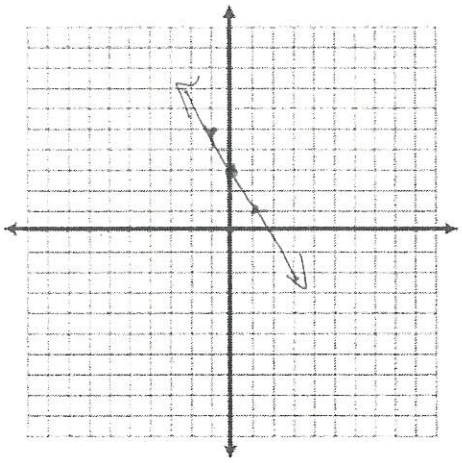


b) $2x + y - 3 = 0$

$y = -2x + 3$

$m = -2$

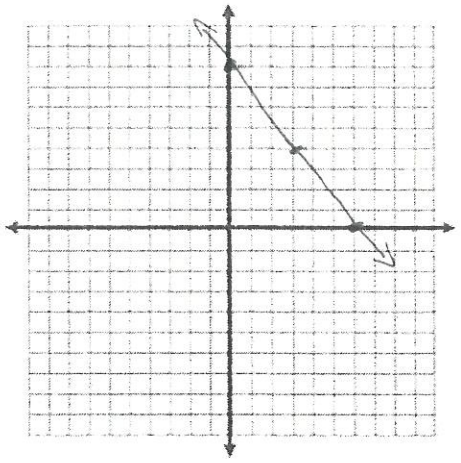
y-int $= 3$



c) $4x + 3y - 24 = 0$

$3y = -4x + 24$

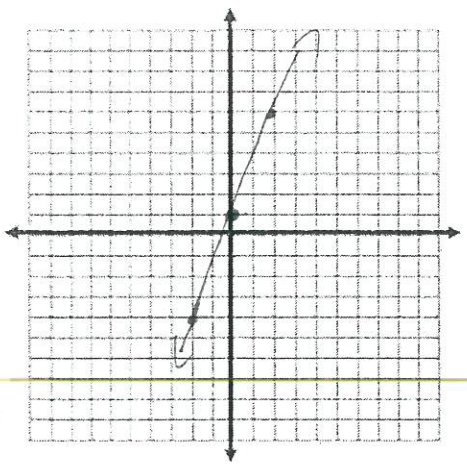
$y = -\frac{4}{3}x + 8$



d) $y = \frac{5}{2}x + 1$

$m = \frac{5}{2}$

y-int $= 1$



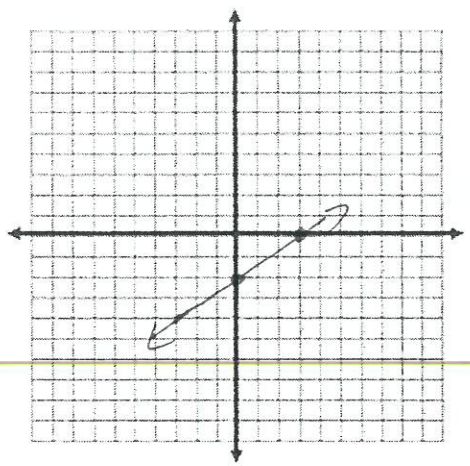
e) $2x - 3y = 6$

$-3y = -2x + 6$

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

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

y-int $= -2$



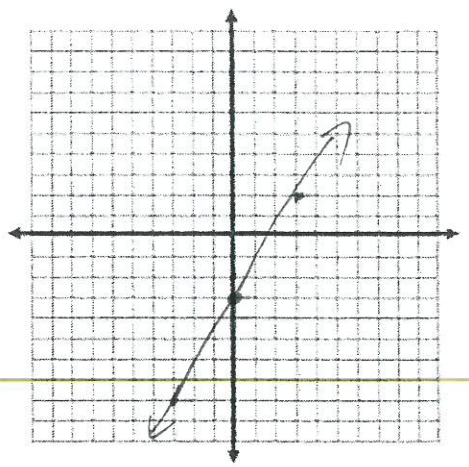
f) $-5x + 3y + 9 = 0$

$3y = 5x - 9$

$y = \frac{5}{3}x - 3$

$m = \frac{5}{3}$

y-int $= -3$



Outcome 9

Level 2

34. Write an equation of a line that has a slope of – 4 and a y-intercept of 9.

$y = -4x + 9$

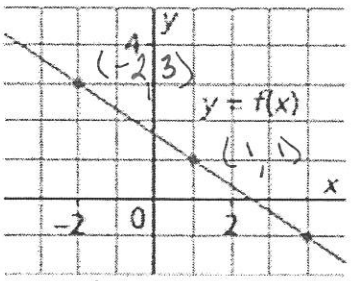
35. Write an equation of a line that has a slope of $\frac{-2}{3}$ and passes through the point (-2,5).

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

Level 3

36. Write an equation for each graph. Do not use estimates in our equations.

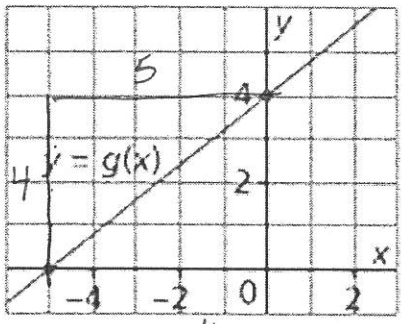
a)



$m = \frac{3-1}{-2-1} = \frac{2}{-3}$

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

b)



$m = \frac{4}{5}$ $y\text{-int} = 4$

$y = \frac{4}{5}x + 4$

37. Write an equation in *slope-intercept form* that:

a) has slope 3 and passes through M(2, -5)

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

$y + 5 = 3x - 6$

$y = 3x - 11$

b) has slope -4 and passes through N(1, 4)

$y = -4x + b$

$4 = -4(1) + b$

$8 = b$

$y = -4x + 8$

c) passes through (-3, 5) and (-1, 2)

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

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

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

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

d) is parallel to $y = -\frac{1}{3}x - 7$ and has an x-intercept of -3

$m = -\frac{1}{3}$ (-3, 0)

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

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

$0 = 1 + b$

$-1 = b$

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

38. Write an equation in <u>general form</u> that:

a) passes through the points (2, 3) and (-4, 5)

$m = \frac{5-3}{-4-2} = \frac{2}{-6} = -\frac{1}{3}$

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

$\times 3 \quad \times 3 \quad \times 3$

$3y - 15 = -1(x+4)$

$3y - 15 = -x - 4$

$x + 3y - 11 = 0$

b) passes through the points (1, 4) and (5, 6)

$m = \frac{6-4}{5-1} = \frac{2}{4} = \frac{1}{2}$

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

$\times 2 \quad \times 2 \quad \times 2$

$2y - 8 = 1(x-1)$

$x - 2y + 7 = 0$

c) has slope 2 and passes through (3, 6)

~~$y = 2x + b$~~

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

$y - 6 = 2x - 6$

$0 = 2x - y$

d) has a slope of 2/3 and passes through (-1, 4)

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

$\times 3 \quad +3 \quad +3$

$3y - 12 = 2(x+1)$

$3y - 12 = 2x + 2$

$0 = 2x - 3y + 14$

e) is perpendicular to y - 4 = 2(x + 7) and passes through the point (-3, -5)

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

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

$+2 \quad +2 \quad +2$

$2y + 10 = -1(x+3)$

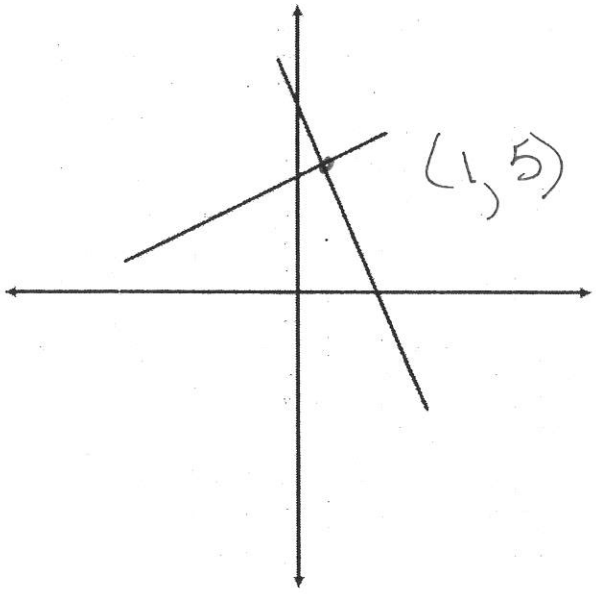
$2y + 10 = -x - 3$

$x + 2y + 13 = 0$

Outcome 10

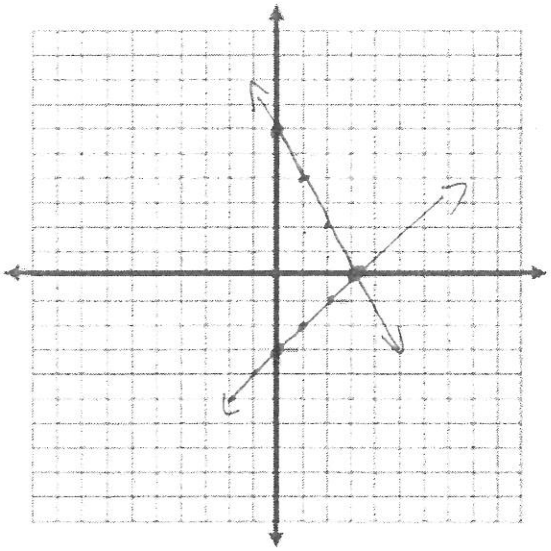
Level 2/3

39. Determine the solution to the system of equations.



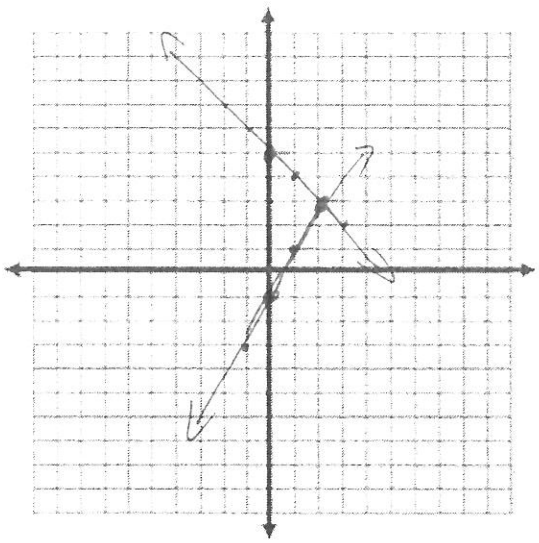
40. Solve the following systems graphically.

a) $x - y = 3$ $y = x - 3$
$2x + y = 6$ $y = -2x + 6$



$(3, 0)$

b) $y = -x + 5$
$y = 2x - 1$



$(2, 3)$

41. Solve the following systems using substitution

a) $x + y = -5$ $x = -y - 5$
$x + 3y = -15$

$-y - 5 + 3y = -15$

$2y = -10$

$y = -5$

$x = -(-5) - 5$

$x = 0$

$(0, -5)$

b) $4x + y = -5$ $y = -4x - 5$
$2x + 3y = 5$

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

$2x - 12x - 15 = 5$

$-10x = 20$

$x = -2$

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

$y = 8 - 5$

$y = 3$

$(-2, 3)$

c) $7x + y - 10 = 0$ $y = -7x + 10$
$3x - 2y = -3$

$3x - 2(-7x + 10) = -3$

$3x + 14x - 20 = -3$

$17x = 17$

$x = 1$

$y = -7(1) + 10$

$y = 3$

$(1, 3)$

42. Solve the following systems using elimination

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

$-x = 0$
$x = 0$

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

$(0, -5)$

b) $2x - 4y = 13$ $\times 2$
$4x - 5y = 8$

$-(4x - 8y = 26)$

$3y = -18$
$y = -6$

$2x - 4(-6) = 13$
$2x + 24 = 13$
$2x = -11$
$x = -\frac{11}{2}$

$(-\frac{11}{2}, -6)$

c) $-0.5x + 0.2y = -1$ $\times 3$
$0.3x - 0.6y = -1.8$

$+ (-1.5x + 0.6y = -3)$

$-1.2x = -4.8$
$x = 4$

$-0.5(4) + 0.2y = -1$
$-2 + 0.2y = -1$
$0.2y = 1$
$y = 5$

$(4, 5)$

43. Determine the number of solutions of each system

a) $y = 3x - 2$
$y = -4x + 5$

1

b) $4x - 2y = -0.2$
$-x + 0.5y = 0.05$

$-2y = -4x - 0.2$
$y = 2x + 0.1$

$0.5y = x + 0.05$
$y = 2x + 0.1$

Infinite

c) $y = 3x - 2$
$y = 3x + 2$

0

44. Determine if each point is a solution to the system.

a) (-2, 3)

$2x - y = -7$

$3x + y = 7$

$2(-2) - 3 = -7$
$-4 - 3 = -7$
$-7 = -7$ ✓

$3(-2) + 3 = 7$
$-6 + 3 = 7$
$-3 = 7$ ✗

No

b) (1, -1)

$3x - 4y = 7$

$9x + 6y = 3$

$3(1) - 4(-1) = 7$
$3 + 4 = 7$
$7 = 7$ ✓

$9(1) + 6(-1) = 3$
$9 - 6 = 3$
$3 = 3$ ✓

Yes

d) (4, -3)

$2x - y = 11$

$x + 2y = -2$

$2(4) - (-3) = 11$
$8 + 3 = 11$
$11 = 11$ ✓

$4 + 2(-3) = -2$
$4 - 6 = -2$
$-2 = -2$ ✓

Yes