Algebra 2 Fall Semester Final Exam Study Guide - Chapter 0 (Part 1)

Name: Key

I apologize for the fact that the all of these are out of numerical order!

Solving Equations

Solve the following equations. Make sure you show work!

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

$6 = -3x - 6$

$12 = -3x$

$\boxed{-4 = x}$

8) $-3(4r-8) = -36$

$-12r + 24 = -36$

$-12r = -60$

$\boxed{r = 5}$

9) $24 = 6(-x-3)$

$4 = -x - 3$

$7 = -x$

$\boxed{-7 = x}$

10) $75 = 3(-6n-5)$

$25 = -6n - 5$

$30 = -6n$

$\boxed{-5 = n}$

11) $-3(1+6r) = 14 - r$

$-3 + -18r = 14 - r$

$-17 = 17r$

$\boxed{-1 = r}$

12) $6(6v+6) - 5 = 1 + 6v$

$36v + 36 - 5 = 1 + 6v$

$36v + 31 = 1 + 6v$

$30v = -30$

$\boxed{v = -1}$

13) $-4k + 2(5k-6) = -3k - 39$

$-4k + 10k - 12 = -3k - 39$

$6k - 12 = -3k - 39$

$9k = -27$

$\boxed{k = -3}$

14) $-16 + 5n = -7(-6+8n) + 3$

$-16 + 5n = 42 + -56n + 3$

$-16 + 5n = 45 - 56n$

$61n = 61$

$\boxed{n = 1}$

15) $10p + 9 - 11 - p = -2(2p+4) - 3(2p-2)$ $\boxed{p = 0}$

16) $-10n + 3(8+8n) = -6(n-4)$ $\boxed{n = 0}$

What is domain? the set of all x-values

What is range? the set of all y-values

Determine if the following are functions.

17) {(10, 4) (3, 14) (-2, -2) (10, 8)}

No; 10 is repeated in the domain

18) {(4, -2)(12, 0)(4, 8)(3, 8)}

No; 4 is repeated in the domain

$(4x^2-5)^2 =$
$(4x^2-5)(4x^2-5)$
$16x^4 - 40x^2 + 25$

Given the functions $f(x) = 10x^2 - 10x + 5$, $g(x) = 4x^2 - 5$, and $h(x) = 12x + 10$.

19) f(-5)
$10(-5)^2 - 10(-5) + 5$
$250 + 50 + 5$
$\boxed{305}$

20) g(10)
$4(10)^2 - 5$
$400 - 5$ $\boxed{395}$

21) h(2b)
$12(2b) + 10$
$\boxed{24b + 10}$

22) h(g(x))
$10(4x^2-5)^2 - 10(4x^2-5) + 5$
$10(16x^4 - 40x^2 + 25) - 40x^2 + 50 + 5$
$160x^4 - 400x^2 + 250 - 40x^2 + 50 + 5$
$\boxed{160x^4 - 440x^2 + 305}$

Write the following linear equations in standard form, and identify A, B, and C.

$Ax + By = C$

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

$y + 1 = -4/5x - 4$
$4/5x + y = -5$
$5(4/5x + y = -5)$
$\boxed{4x + 5y = -25}$

$\boxed{A = 4 \quad B = 5 \quad C = -25}$

8) $y - 5 = \frac{8}{3}(x - 3)$

$y - 5 = 8/3x - 8$
$3 = 8/3x - y$
$3(3 = 8/3x - y)$
$\boxed{9 = 8x - 3y}$

$\boxed{A = 8 \quad B = -3 \quad C = 9}$

9) $-3 + 2x = y$

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

$\boxed{A = 2 \quad B = -1 \quad C = 3}$

10) $0 = -y + x - 4$

$\boxed{4 = x - y}$

$\boxed{A = 1 \quad B = -1 \quad C = 4}$

Find the slope of the line that passes through each pair of points. $\frac{y_2 - y_1}{x_2 - x_1}$

1) (2, 4), (4, 7)
$\frac{7-4}{4-2} = \boxed{\frac{3}{2}}$

2) (½, -4), (½, 5)
$\frac{5-(-4)}{1/2 - 1/2} = \frac{9}{0}$ 0

3) (0, -2), (2, 4)
$\frac{4-(-2)}{2-0} = \frac{6}{2} = 3$

4) (0, 2), (8, 8)
$\frac{8-2}{8-0} = \frac{6}{8} = \frac{3}{4}$

5) (2, 4) and (-7, 8)
$\frac{8-4}{-7-2} = 4/-9$

6) (-7, 9), (-6, -5)
$\frac{-5-9}{-6-(-7)} = \frac{-14}{1}$

Given the following information, write an equation in slope intercept form.

$y = mx + b$

10) Slope = -⅔, passes through the point (-1, 3)
$3 = -2/3(-1) + b$
$3 = 2/3 + b$
$7/3 = b$
$\boxed{y = -2/3x + 7/3}$

11) Slope = -2, passes through the point (3, 5)
$5 = -2(3) + b$
$5 = -6 + b$
$11 = b$
$\boxed{y = -2x + 11}$

12) Slope = -⅘, passes through the point (0, 7)
$\boxed{y = -4/5x + 7}$

13) Slope = 3, passes through the point (-1, 2)
$2 = 3(-1) + b$
$2 = -3 + b$
$5 = b$
$\boxed{y = 3x + 5}$

Given the following information, write an equation in slope intercept form.

14) Passes through (-1, -2) and (3, -7)

Slope $= \frac{-7-(-2)}{3-(-1)} = \frac{-7+2}{4} = \frac{-5}{4}$

$-2 = -5/4(-1) + b$

$-2 = 5/4 + b$

$-3.25 = b$

$\boxed{y = -5/4x - 3.25}$

15) Passes through (0, 3) and (-2, 3)

Slope: $\frac{3-3}{-2-0} = \frac{0}{-2} = 0$

$3 = 0(0) + b$

$3 = b$

$\boxed{y = 0x + 3 \text{ or } y = 3}$

16) Passes through (15, 16), (-5, 0)

Slope $= \frac{16-0}{15+5} = \frac{16}{20} = 4/5$

$0 = 4/5(-5) + b$

$0 = -4 + b$

$4 = b$

$\boxed{y = 4/5x + 4}$

17) Passes through (1, 0), (-7, 2)

Slope: $\frac{2-0}{-7-1} = \frac{2}{-8} = \frac{-1}{4}$

$0 = -1/4(1) + b$ $b = 1/4$

$\boxed{y = -1/4x + 1/4}$

18) The table shows the relationship between time (in minutes) to depth (in centimeters) of a plastic bottle (filled partially with water) sinking in a lake.

Time (in minutes)	Depth (in cm)
2	7
4	8
6	13
8	19
10	20
12	24
14	32
16	37
18	38
20	41
22	47

a) Describe the correlation. Positive

b) Using the points (4, 8) and (20, 41), write a prediction equation to represent this data.

$\frac{41-8}{20-4} = \frac{33}{16} = 2.0625$

$8 = 2.0625(4) + b$

$-0.25 = b$

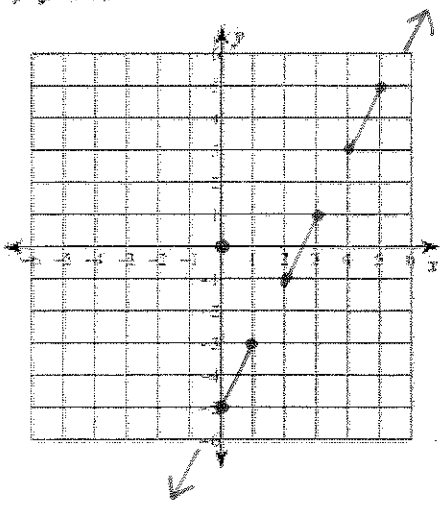
$\boxed{y = 2.0625x - 0.25}$

c) Determine the depth if the bottle has been sinking for 40 minutes.

$2.0625(40) - 0.25$

$\boxed{82.25}$

5) $y > 2x - 5$ $0 > -5$ ✓



11) $8x - 3y \leq 12$

$-3y \leq -8x + 12$

$y \geq 8/3x - 4$

$0 \geq -4$