Warm Up May 6, 2019

1.) Two functions are shown below:

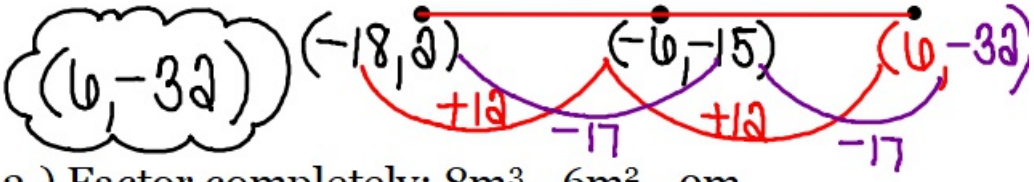
$f(x) = 1/3 \cdot (3)^x$ (Y_1)

$g(x) = 4x + 10$ (Y_2)

X=3

What is the largest integer value x such that $f(x) \leq g(x)$?

2.) The midpoint of line segment XZ at (-6, -15). The endpoint X is located at (-18, 2). What are the coordinates of Z?



3.) Factor completely: $\frac{8m^3}{m} - \frac{6m^2}{m} - \frac{9m}{m}$

$m(8m^2 - 6m - 9)$

$a = 8 \quad b = -6 \quad c = -9$

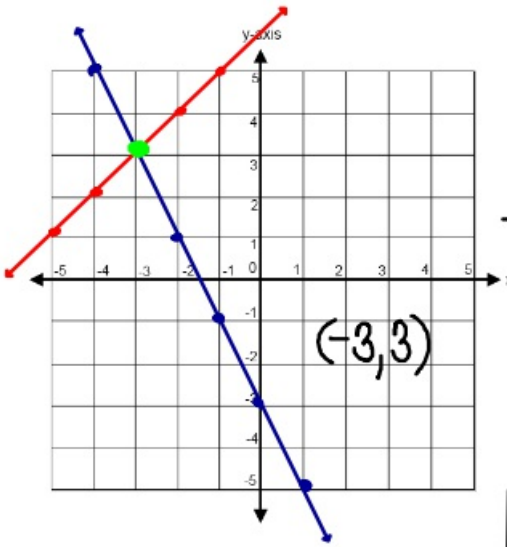
$(8m^2 + 6m)(-12m - 9)$

$\frac{8m}{2m} \quad \frac{6m}{2m} \quad \frac{-12m}{-3} \quad \frac{-9}{-3}$

$2m(4m+3) - 3(4m+3)$

$m(2m-3)(4m+3)$

ac = -72	
1	-72
2	-36
3	-24
6	-12
8	-9



$$2x+y=-3$$
$$-2x \quad -2x$$
$$y=-2x-3$$

#2 $2x+9y=27$
$x-3y=-24$

$$x-3y=-24$$
$$+3y \quad +3y$$
$$x=3y-24$$

$$2(3y-24)+9y=27$$
$$6y-48+9y=27$$
$$15y-48=27$$
$$+48 \quad +48$$
$$\frac{15y}{15}=\frac{75}{15}$$
$$y=5$$

$(-9,5)$

$$x=3(15)-24$$
$$x=-9$$

#3 $4x+2y=6$
$-2x+2y=18$

$$\frac{6x}{6}=\frac{-12}{6}$$
$$x=-2$$

$$4(-2)+2y=6$$
$$-8+2y=6$$
$$2y=14$$
$$y=7$$

$(-2,7)$

Example The table below shows the number of students per computer in United States public schools for certain school years from 1990 to 2000.

Year	0	2	4	6	8	10
Students per Computer	22	18	14	10	6.1	5.4

A. What is the equation for the line of best fit?

$y = -1.8x + 21.3$

B. What is the meaning of the slope?

The number of students per computer decreases by 1.8 every year.

C. What is the meaning of the y-intercept?
(value of y when x = 0 *in context*)

It was predicted that there would be 21.3 students per computer in 1990.

The equation $y = 37x - 153$ models the relationship where x is the number of carbon atoms, and y is the boiling point.

a. What is the boiling point for a hydrocarbon with a 10 carbon Atoms?

$y = 37(10) - 153$

$y = 217°$

b. If the boiling point is 587, how many carbon atoms are there?

$587 = 37x - 153$

$+153 \quad +153$

$\frac{740}{37} = \frac{37x}{37}$

$x = 20$ carbon atoms

Five students in Mrs. Straub's Algebra class reported the number of hours that they studied for a test. The number of hours and their test scores are in the table below.

Hours of Study	Test Score
2	85
3	81
4	88
5	91
6	98

a. Find the equation of the line of best fit $y = 3.6x + 74.2$

b. What is the meaning of the y-intercept? If you study 0 hours, your predicted score is 74.2.

C. What is the predicted score of a student who studied 1.5 hours?

$y = 3.6(1.5) + 74.2$

$y = 79.6$

D. If a student earned a 77 on the test, based on the line of best fit, how many hours did they study?

$77 = 3.6x + 74.2$

$-74.2 \quad -74.2$

$\frac{2.8}{3.6} = \frac{3.6x}{3.6}$

$x = .77$ hours

4. The Jones' average phone bills in the years 1999 to 2006 are displayed in the table below.

Year	1999	2000	2001	2002	2003	2004	2005	2006
Average Monthly Bill	$65	$65	$68	$72	$70	$73	$78	$82

a. What is the line of best fit?_____

b. According to the line of best fit for the data, *approximately* how much per month would the Jones' pay in 2008?_____

5. The table shows the average hourly earnings in the US production workers for selected years.

Year	1960	1965	1970	1975	1980	1985	1990	1995	1999
Earnings	2.09	2.46	3.23	4.53	6.66	8.57	10.01	11.43	13.24

a. Find the regression equation(line of best fit):_____

b. What is the slope?_____

c. What is the meaning of the slope?_____

d. What is the y-intercept?_____

e. What is the meaning of the y-intercept?_____

f. According to the regression equation what will be the average hourly earnings in the year 2010?_____

g. Identify the correlation coefficient. _____

h. Describe the correlation. _____