

MONTGOMERY COLLEGE  
Department of Mathematics  
Rockville Campus

MA 103 KATIRAIK QUIZ #2 Form B SECTIONS (2.1, 2.2, 2.3, 2.4, 3.1) Spring 08

NAME Solution

SCORE: 20/20

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1. Write the Slope - intercept form for a line passing through the points  $(-3, 1)$  and  $(-2, -1)$ .

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

$$\begin{aligned} y &= mx + b \\ -1 &= -2(-2) + b \\ -1 - 4 &= b \\ -5 &= b \end{aligned}$$

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

2. Write the Slope - intercept form for a line passing through the points

X	-3	0	3	6
F(x)	3	5	7	9

$$m = \frac{5 - 3}{0 - (-3)} = \frac{2}{3}$$

$$\boxed{y = \frac{2}{3}x + 5}$$

3. Find the slope - intercept form of a line parallel to  $2y + 4x = 1$ , passing through  $(-6, 3)$

$$2y = -4x + 1$$

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

$$y = mx + b$$

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

$$3 - 12 = b \Rightarrow \boxed{b = -9}$$

$$\boxed{y = -2x - 9}$$

4. Find the slope - intercept form of a line perpendicular to  $y = \frac{-1}{5}x + 5$ , passing through  $(-2, -8)$

$$m_{\perp} = 5$$

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

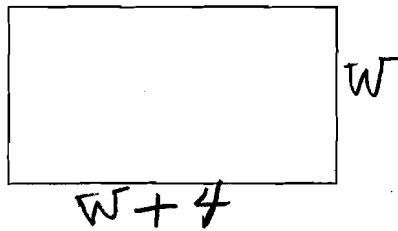
$$\begin{array}{r} -8 = -10 + b \\ +10 \quad +10 \end{array}$$

$$\boxed{2 = b}$$

$$\boxed{y = 5x + 2}$$

5. The length of a rectangular room is 4 feet more than its width. If the perimeter of the room is 100 feet, find the width and length of the room.

$$4 \overline{) 92} \begin{array}{r} 23 \\ 8 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$



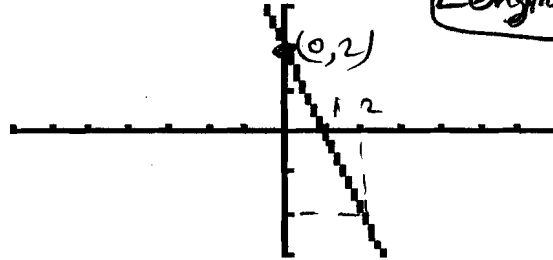
$$2W + 2(W + 4) = 100$$

$$2W + 2W + 8 = 100$$

$$4W = 92$$

$$W = 23 \text{ feet}$$

$$\text{Length} = 27 \text{ feet}$$



6. Given the Graph of  $F(x)$

Estimate the following:

a)  $F(0) = 2$  (When  $x=0$   $y$  is 2)

b) The  $x$  value so that  $F(x) = -2$   $x = 2$  when  $x=2$   $y$  is  $-2$

7. In 1990 Toyota sold 1.5 million vehicles. This number increased to 2.8 million in 2003.

a. Find a linear function that models the data.  $(0, 1.5)$   $(13, 2.8)$   $m = \frac{2.8 - 1.5}{13} = \frac{1.3}{13} = 0.1$

$$f(x) = 0.1x + 1.5$$

- b. Determine the year when Toyota sold 2.5 million vehicles by solving a linear equation.

$$2.5 = 0.1x + 1.5$$

$$1 = 0.1x \Rightarrow x = 10$$

$$\text{the year was } 1990 + 10 = 2000$$

- c. Determine the number of vehicles Toyota will sell in the year 2009.

$$2009 - 1990 = 19 \Rightarrow f(19) = 0.1(19) + 1.5 = 1.9 + 1.5 = 3.4 \text{ million vehicles}$$