Refresher Course Math 1050 and 1060 Practice Problems Set 3   Fall 2007

1.) Complete the ordered pair (, 7) for the equation $y = 2x - 9$.

$$7 = 2x - 9 \qquad 16 = 2x \qquad x = 8 \qquad \boxed{(8, 7)}$$

2.) Find an equation of a line with slope 3 and y-intercept (0,-5).

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

3.) Find the equation of the line through the points (3,4) and (5,-6). Write the equation in slope-intercept form.

$$\frac{-6-4}{5-3} = \frac{-5}{\cancel{10}} \text{ slope} \qquad b = 34$$

$$y = -10x + b \qquad 4 = -10(3) + b \qquad y = -10x + 34$$
$$y = -5x + 5 \qquad 4 = -15 + b \qquad b = 19 \qquad \boxed{y = -5x + 19}$$

4.) Find the slope of the line $4x + 5y = 10$.

$$5y = -4x + 10$$
$$y = -\frac{4}{5}x + 2 \qquad \text{Slope} \boxed{-\frac{4}{5}}$$

5.) Find the slope-intercept form of the equation of the line that passes through the point (2,-1) and is parallel to the line $2x - 3y = 5$.

$$\text{Slope } \frac{2}{3}$$

$$y = \frac{2}{3}x + b \qquad \boxed{y = \frac{2}{3}x + \frac{8}{3}}$$

$$-1 = -\frac{2}{3} + b \Rightarrow b = \frac{8}{3}$$

6.) During 2000, Nike's net sales were \$9.0 billion, and in 2001 net sales were \$9.5 billion. Write a linear equation giving the net sales y in terms of the year x. Then use the equation to predict the net sales for 2002.

Setting $t = 0$ to be the year 2000,

$$y = .5t + 9 \quad \text{measured in billions}$$

$$t = 2 \Rightarrow y = 10 \quad \text{so,} \quad \boxed{\$ 10 \text{ billion.}}$$

7.) Does the equation $y^3 + 6x - 1 = 4$ represent a function?

$$x = \frac{5 - y^3}{6}$$

$$y = \sqrt[3]{5 - 6x}$$

Yes, a function of x in terms of y. Or a function of y in terms of x

8.) Does the equation $y^4 - 7x + 5 = 12$ represent a function?

$$7x = y^4 - 7 \qquad x = \frac{y^4}{7} - 1$$

$$y = \pm \sqrt[4]{7x + 7}$$

Yes, a function of x in terms of y, but not a function of y in terms of x.

9.) Let $f(x) = 3x^2 - 2x$. Find each of the following:

a.) $f(-3)$

$$3(-3)^2 - 2(-3)$$
$$= 27 + 6 = \boxed{33}$$

b.) $f(t)$

$$\boxed{3t^2 - 2t}$$

c.) $\dfrac{f(x+h) - f(x)}{h}$

$$\frac{3(x+h)^2 - 2(x+h) - 3x^2 + 2x}{h}$$

$$= \frac{3x^2 + 6xh + 3h^2 - 2x - 2h - 3x^2 + 2x}{h}$$

$$= \frac{6xh + 3h^2 - 2h}{h} = \boxed{6x - 2 + 3h}$$

$$h \neq 0.$$

10.) <u>Example:</u> Let $f(x) = \begin{cases} -5x+6 & x \le -3 \\ x^2+2 & x > -3 \end{cases}$ Find

a.) $f(-4)$ b.) $f(-3)$ c.) $f(6)$

$\boxed{26}$ $\boxed{21}$ $\boxed{38}$
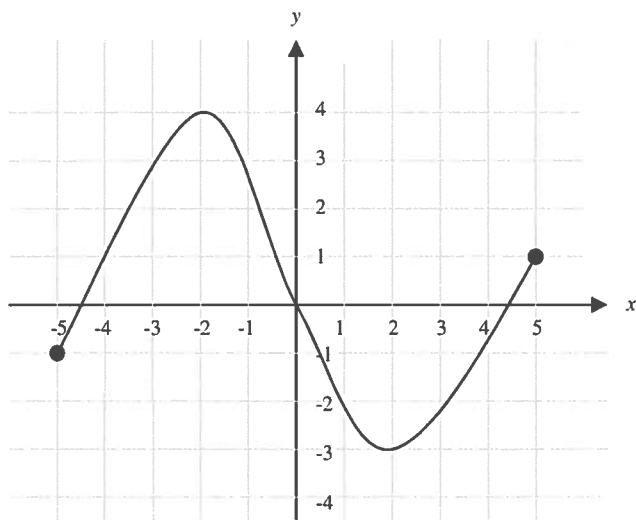
<u>Example:</u> Use the graph of the function f given below to answer the following questions.

a.) domain $[-5, 5]$

b.) range $[-3, 4]$

c.) $f(-2)$ 4

d.) $f(0) = 0$ O

e.) $f(x) = 4$ when $x=?$ $x = -2$

f.) decreasing

~~$(-5, -1)$~~ $(-2, 2)$

g.) increasing

$(-5, -2) \cup (2, 5)$

h.) relative max $(-2, 4)$

i.) relative min $(2, -3)$

11.) Determine whether the function is even, odd, or neither.

a.) $f(x) = x^3 - 5$

Neither.

b.) $f(x) = x^2 + 2x - 3$

Neither.

c.) $f(x) = x^3 - 5x$

odd.