Function Notation Practice **NAME:**_____

1. Evaluate the following expressions given the functions below:

$$g(x) = -3x + 1 \qquad f(x) = x^2 + 7 \qquad h(x) = \frac{12}{x} \qquad j(x) = 2x + 9$$

a. $g(10) =$ $-3(10)+1$, $-30+1$, $\boxed{-29}$

b. $f(3) =$ 3^2+7, $9+7$, $\boxed{16}$

c. $h(-2) =$ $\frac{12}{-2} = \boxed{-6}$

d. $j(4/5) =$ $2\left(\frac{4}{5}\right)+9$, $\frac{8}{5}+\frac{45}{5}$, $\boxed{\frac{53}{5}}$

e. $f(a+6)$ $(a+6)^2+7$, $a^2+12a+36+7$, $\boxed{a^2+12a+43}$

f. $g(b+c)$ $-3(b+c)+1$, $\boxed{-3b-3c+1}$

g. Find x if $g(x) = 16$

$16 = -3x+1$

$15 = -3x$

$-5 = x$

h. Find x if $h(x) = -2$

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

$-2x = 12$

$\boxed{x = -6}$

i. Find x if $f(x) = 23$

$23 = x^2 + 7$

$\sqrt{16} = \sqrt{x^2}$

$4 = x$, $-4 = x$ or $\boxed{x = \pm 4}$

*Challenge: $f(h(x))$

substitute h function in f function

$\left(\frac{12}{x}\right)^2 + 7$ $\boxed{\frac{144}{x^2}+7}$

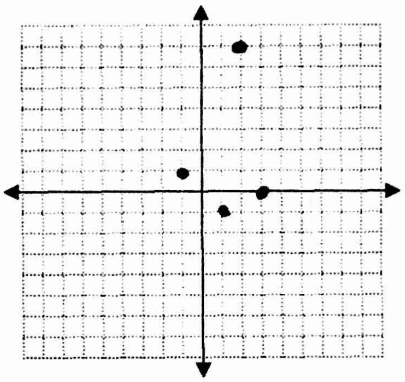
2. Change the following statements into coordinate points and then plot them on graph.

a. $f(-1) = 1$ $(-1, 1)$

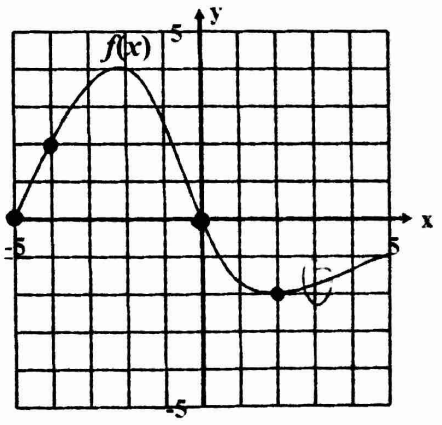
b. $f(2) = 7$ $(2, 7)$

c. $f(1) = -1$ $(1, -1)$

d. $f(3) = 0$ $(3, 0)$



3. Given this graph of the function f(x),



Find:

a. $f(-4) =$ $\boxed{2}$

b. $f(0) =$ 0

c. $f(3) =$ $-2 < f(3) < -1$

d. $f(-5) =$ 0

e. x when $f(x) = -2$ $\boxed{x = 2}$

f. x when $f(x) = 0$ $\boxed{x = 0}$, $\boxed{x = -5}$

APPLICATION

4. Swine flu is attacking the North Pole. The function below determines how many elves have swine flu where t = time in days and S = the number of people in thousands.

$$S(t) = 9t - 4$$

a. Find $S(4)$. $9(4)-4$
$36-4$
32

b. What does $S(4)$ mean?
32000 elves sick in 4 days

c. Find t when $S(t) = 23$.
$23=9t-4$
$27=9t$
$3=t$

d. What does $S(t) = 23$ mean?
23,000 elves sick in 3 days

e. Graph the function.