AFM **Name** _____
Unit 1 Test Review **Date** _____

Find the DOMAIN for problems 1 – 4. Write in interval notation.

1. f(x) = $\frac{x}{x^2-9}$ 2. f(x) = $\sqrt{2-x}$ 3. f(x) = 4x + 3 4. f(x) = $\frac{\sqrt{x+2}}{x^2+2x-3}$

domain:_____ domain:_____ domain:_____ domain:_____

5. The graph of a function f is known. Then the graph of y = f(x-2) may be found by _____.

6. The graph of a function is known. Then the graph of y=f(-x) may be obtained by a reflection about the ___-axis.

7. True or False:

_____ a) The graph of y = -f(x) is the reflection about the x-axis of the graph of y = f(x).

_____ b) To obtain the graph of y = f(x + 2) – 3, shift the graph of y = f(x) horizontally to the right 2 units and vertically down 3 units.

8. Find the function that is finally graphed after the following transformations are applied to the graph of $y=\sqrt{x}$.

a) 1. Shift up 2 units.
2. Reflect about the x-axis.

b) 1. Reflect about the x-axis
2. Shift up 2 units.
3. Shift left 3 units.

c) 1. Reflect about the y-axis.
2. Vertically stretch by 3.
3. Shift down 2 units.
4. Shift right 4 units.

f(x) = _____ f(x) = _____ f(x) = _____

9. USE GRAPH PAPER. State and graph the parent function (dotted line). Then describe the transformation of the parent function and draw the final graph (make sure I clearly see the points and connect using solid line). State the domain and range <u>for the final graph</u>.

a) f(x) = x^3+4 b) f(x) = $(x+4)^2$ c) f(x) = $-\frac{1}{2}|x|$

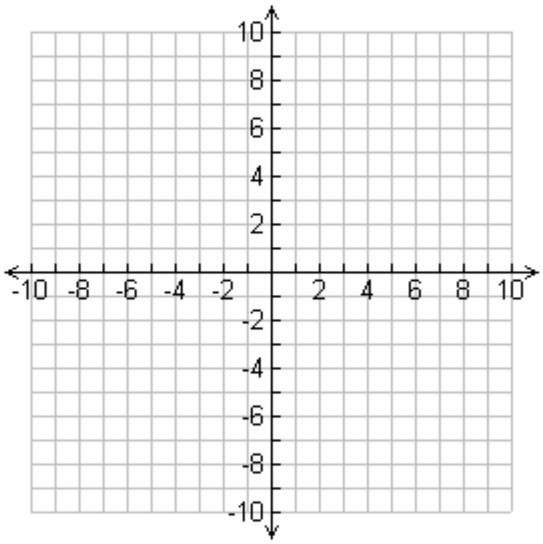
d) f(x) = $-2(x-3)^2$ -1 e) f(x) = $2\sqrt{-x-1}$

10. State the domain in interval notation. Then graph (on graph paper). Then use the graph to state the range.

a) f(x) = $\begin{cases} 3x, & -2 < x \le 1 \\ x+1, & x > 1 \end{cases}$ b) f(x) = $\begin{cases} x, & -4 \le x < 0 \\ 1, & x = 0 \\ 3x, & x > 0 \end{cases}$ c) f(x) = $\begin{cases} x^2, & -2 \le x \le 2 \\ 2x-1, & x > 2 \end{cases}$

domain:_____ domain:_____ domain:_____

range:_____ range:_____ range:_____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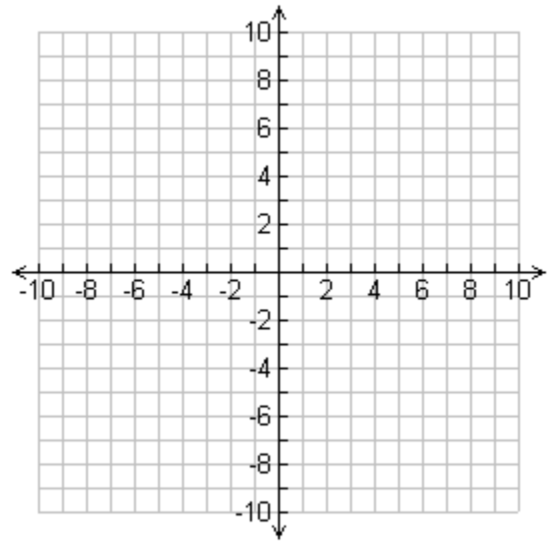
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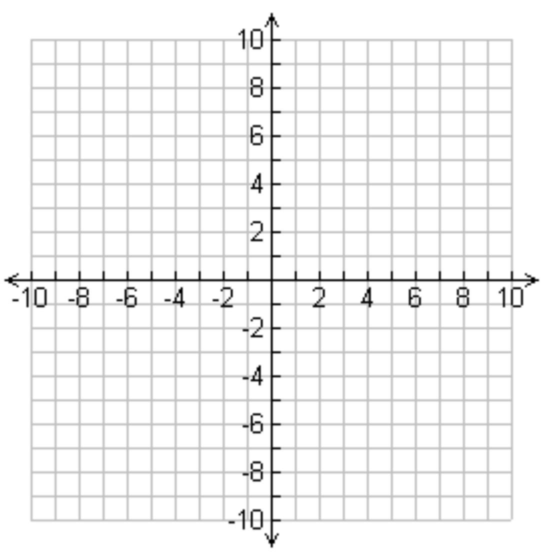
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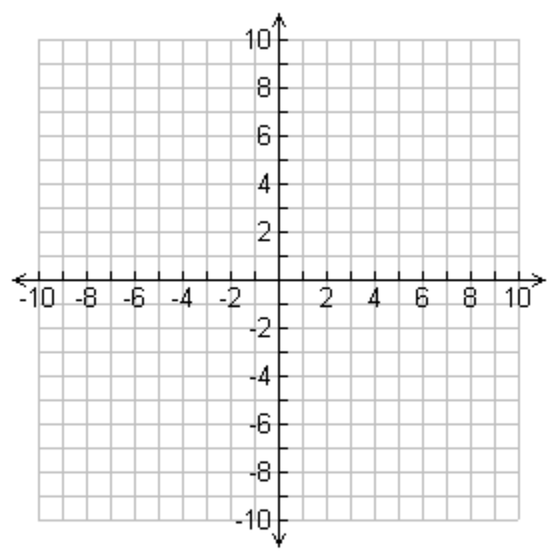
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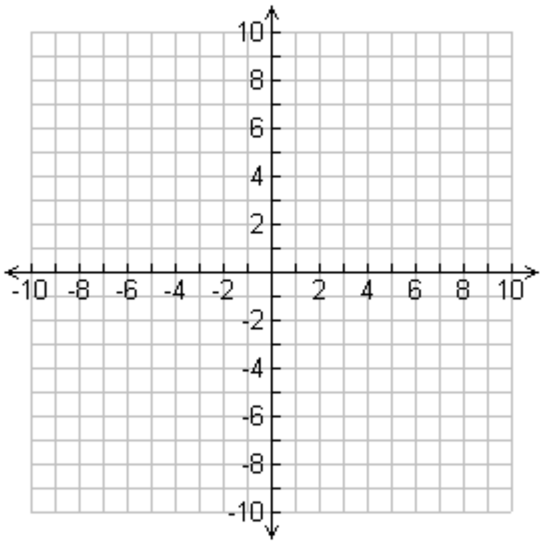
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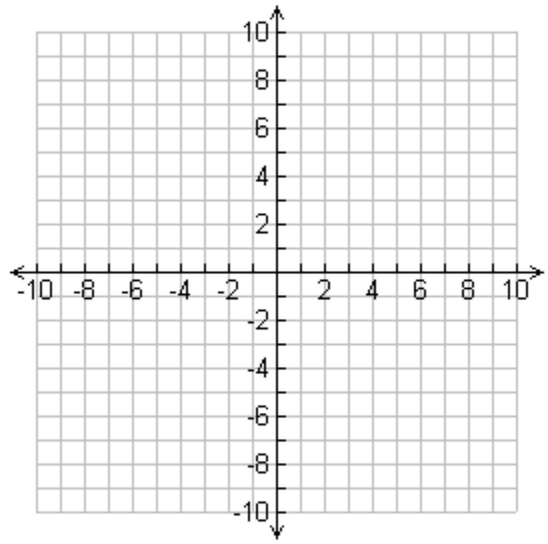
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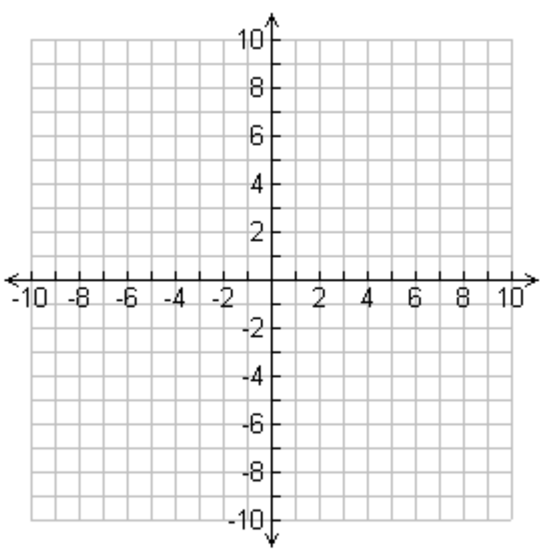
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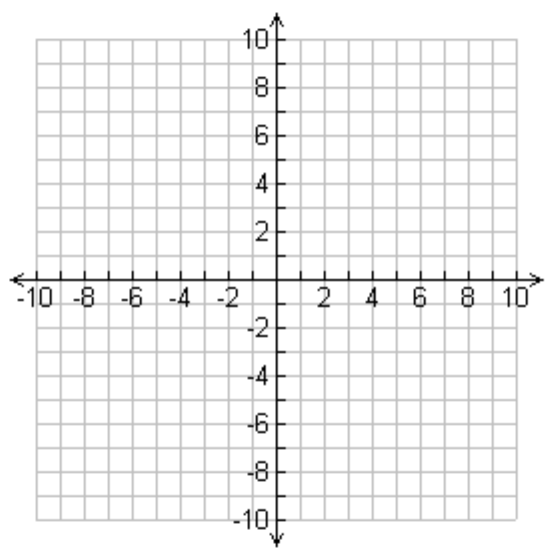
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11. Find $\frac{f(a+h)-f(a)}{h}$, where $h \neq 0$, for the following two functions.

a) f(x) = 2x + 3

b) f(x) = $x^2 - 2$

12. Evaluate the piecewise function for f(-2), f(1), and f(4). $f(x) = \begin{cases} x^2 - 2x, \text{ if } x \leq 1 \\ 3x + 1, \text{ if } x > 1 \end{cases}$

13. The domestic postage rate for first class letters weighing 12 oz or less is 33 cents for a letter weighing 1 oz or less and 22 cents for each additional ounce (or part of an ounce). Express the postage P as a function of the weight x of a letter, with $0 < x \leq 12$.

14. The cost to attend a play at the theater is $120 for a group of up to ten students. For each student over ten, the cost is $12 for each additional student.

a. Write a piecewise function to show the cost to attend the play.

b. How much will it cost for 7 students to attend? For 20 students?

15. Using the graph below, identify the domain, range, intervals of increasing, decreasing and/or constant. Then evaluate at the given values.

a) Domain: _____

b) Range: _____

c) Increasing: _____

d) Decreasing: _____

e) Constant: _____

f) f(-4) = _____

g) f(0) = _____

h) f(2) = _____

i) If f(x)= 2, the x = _____