College Review Math Name _____

Reflections, Stretching, Shrinking and Translations

For each scenario; (a) determine what axis (if any) the function will reflect over, (b) whether the graph will stretch or shrink vert. or horiz. (if at all), and (c) tell how far it will translate (left, right, up or down).

1) $y = 3f(x)$ (a) _____

(b) _____

(c) _____

2) $y = f(-x)$ (a) _____

(b) _____

(c) _____

3) $y = f(x) - 5$ (a) _____

(b) _____

(c) _____

4) $y = f(-3x)$ (a) _____

(b) _____

(c) _____

5) $y = -f(x + 3)$ (a) _____

(b) _____

(c) _____

6) $y = f(\frac{1}{2}x) + 1$ (a) _____

(b) _____

(c) _____

Remember, sometimes the order does matter. On #5 & 6, there are two things that happen to the graph, but since one affects the x and the other the y, the order in which you do them doesn't matter.

Examples when both transformations affect the same axis:

$y = 2f(x) - 3$
1) stretch (vertically)
2) down 3

$y = f(2x - 3)$
1) right 3
2) shrink (horizontally)

Describe what will happen to the graph, and in the correct order that it will occur.

7) $y = \frac{1}{2}f(x) + 7$

8) $y = f(4x + 1)$

9) $y = f(-x - 6)$

10) $y = |f(x)| - 2$

Use the original x/y-chart shown to the right to find the "new" coordinates for each scenario below.

| x | y |
|---|---|
| -3 | 6 |
| -1 | -8 |
| 4 | 8 |
| 5 | -2 |

11) f(-x)

| x | y |
|---|---|
| | |

12) | f(x) |

| x | y |
|---|---|
| | |

13) y = x

| x | y |
|---|---|
| | |

14) f(x + 3) + 2

| x | y |
|---|---|
| | |

15) $f(\frac{1}{3}x)$

| x | y |
|---|---|
| | |

16) -2f(x)

| x | y |
|---|---|
| | |

17) f(2x) – 5

| x | y |
|---|---|
| | |

18) 4f(-x)

| x | y |
|---|---|
| | |

19) 2f(x) + 7

| x | y |
|---|---|
| | |