

Exercises

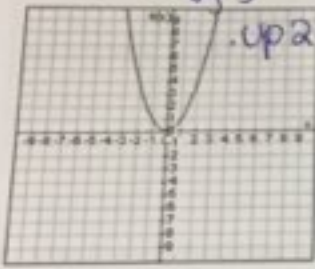
For #1-10, suppose that $f(x) = x^8$. Match each of the numbered functions on the left with the lettered function on the right that it equals.

- | | | |
|-----------------------|---|-----------------------|
| 1.) $f(x) + 2$ | D | A.) $(-x)^8$ |
| 2.) $3f(x)$ | I | B.) $\frac{1}{3}x^8$ |
| 3.) $f(-x)$ | A | C.) $x^8 - 2$ |
| 4.) $f(x - 2)$ | G | D.) $x^8 + 2$ |
| 5.) $\frac{1}{3}f(x)$ | B | E.) $(\frac{x}{3})^8$ |
| 6.) $f(3x)$ | H | F.) $-x^8$ |
| 7.) $f(x) - 2$ | C | G.) $(x - 2)^8$ |
| 8.) $-f(x)$ | F | H.) $(3x)^8$ |
| 9.) $f(x + 2)$ | J | I.) $3x^8$ |
| 10.) $f(\frac{x}{3})$ | E | J.) $(x + 2)^8$ |

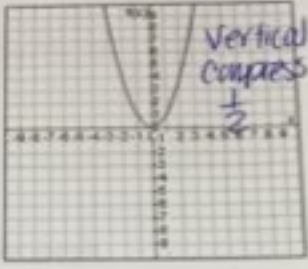
Function Transformations Part 2 Practice name: _____ date: _____

Describe the transformation applied to the parent function $f(x) = x^2$. Then do a quick sketch of each one.

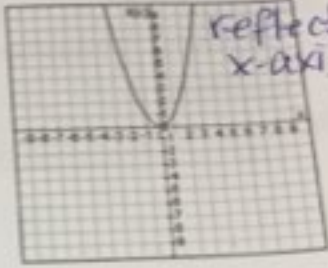
1. $f(3x) + 2$ horiz comp by 3 up 2



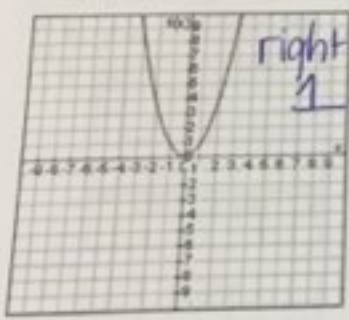
2. $\frac{1}{2} \cdot f(x-2)$ right 2 vertical compress 1/2



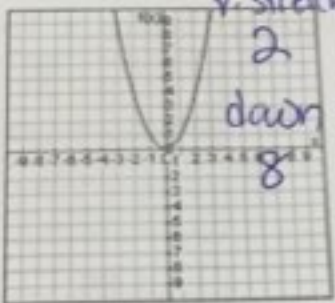
3. $-f(x+5)$ left 5 reflect x-axis



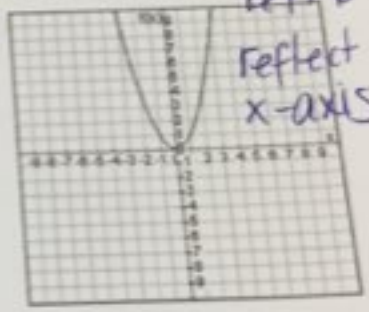
4. $g(x) = (x-1)^2$ right 1



5. $g(x) = 2x^2 - 8$ v. stretch 2 down 8

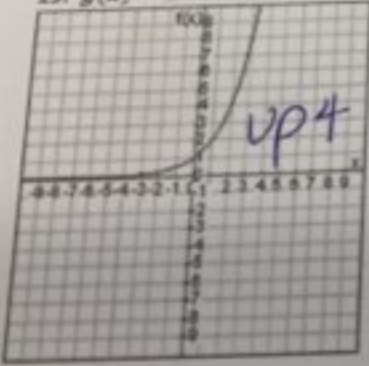


6. $g(x) = -(x+6)^2$ left 6 reflect x-axis

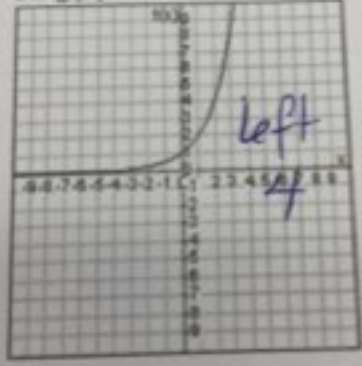


Describe the transform denoted by $g(x)$ using the function $f(x) = 2^x$ as the parent function. Write $g(x)$ in terms of $f(x)$ and then do a quick sketch of the graph of $g(x)$. The function $f(x)$ is already graphed for you.

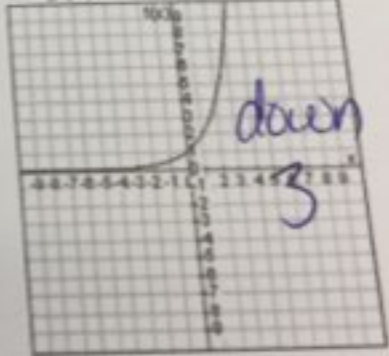
19. $g(x) = 2^x + 4$ up 4



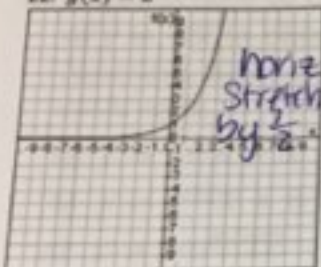
20. $g(x) = 2^{x+4}$ left 4



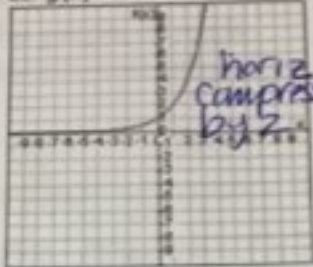
21. $g(x) = 2^x - 3$ down 3



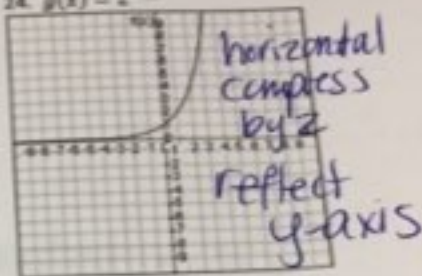
22. $g(x) = 2^{0.5x}$



23. $g(x) = 2^{2x}$

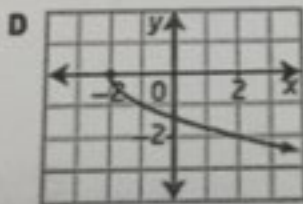
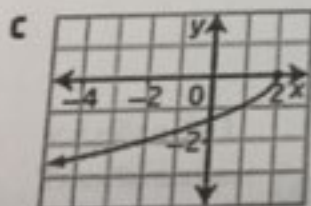
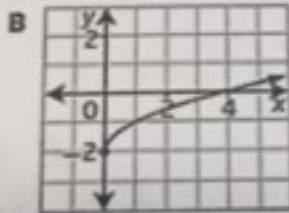
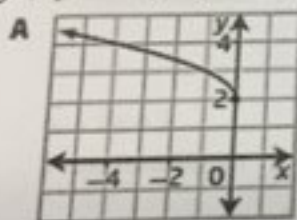


24. $g(x) = 2^{-2x}$



3. Match each function with its graph.

- B a) $y = \sqrt{x} - 2$ down 2
 A b) $y = \sqrt{-x} + 2$ reflect y, up 2
 D c) $y = -\sqrt{x+2}$ reflect x, left 2
 C d) $y = -\sqrt{-(x-2)}$ reflect x, reflect y, right 2



2. Explain how to transform the graph of $y = \sqrt{x}$ to obtain the graph of each function. State the domain and range in each case.

- a) $y = 7\sqrt{x-9}$ right 9, stretch by 7
 b) $y = \sqrt{-x} + 8$ reflect y-axis, up 8
 c) $y = -\sqrt{0.2x}$ horiz. compress 0.2, reflect x-axis
 d) $4 + y = \frac{1}{3}\sqrt{x+6}$ -4 left 6, v. compress by $\frac{1}{3}$, down 4

Describe the transformations to the parent function $y = |x|$ to create the following functions.

1. $y = |x-2|$
Transformation: right 2
2. $y = |x|+3$
Transformation: up 3
3. $y = 2|x+3|$
Transformation: left 3
stretch by 2
4. $y = 3|x|$
Transformation: stretch by 3
5. $y = -2|x+3|-1$
Transformation: left 3
stretch 2
reflect x
down 1
6. $y = 2|x+8|$
Transformation: up 8
stretch 2