F.S.T. **Name _____**

Homework 3-5 **Block _____ Date _____**

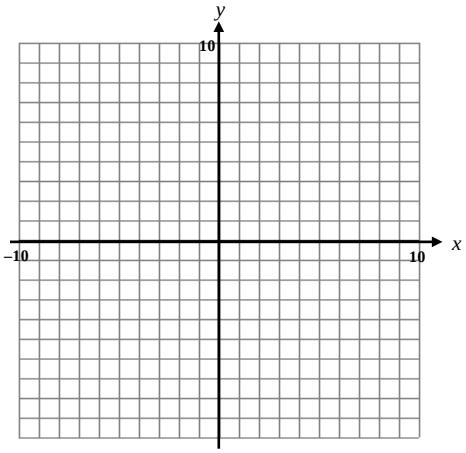
For each problem, do the following steps:
(a) Identify the parent function and name.
(b) State the transformation rule.
(c) Draw the graph of the parent function and the image function by hand.

1. $y = \left(\frac{1}{2}x\right)^3$

(a) _____

(b) _____

(c)

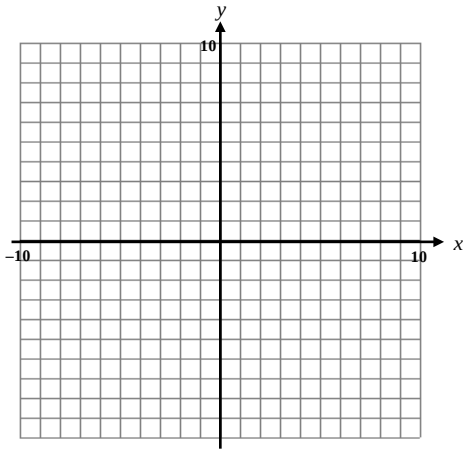


2. $y = \sqrt{2x}$

(a) _____

(b) _____

(c)

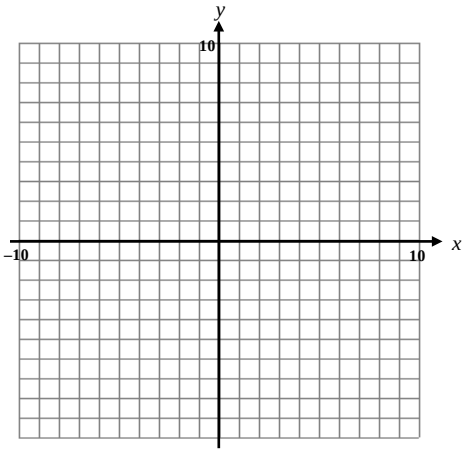


3. $y = -3x^2$

(a) _____

(b) _____

(c)

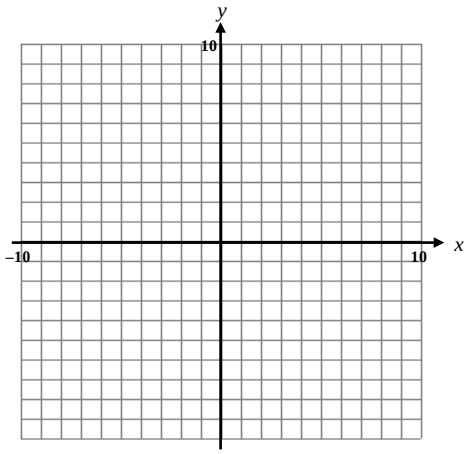


4. $y = 2\left|\frac{x}{4}\right|$

(a) _____

(b) _____

(c)

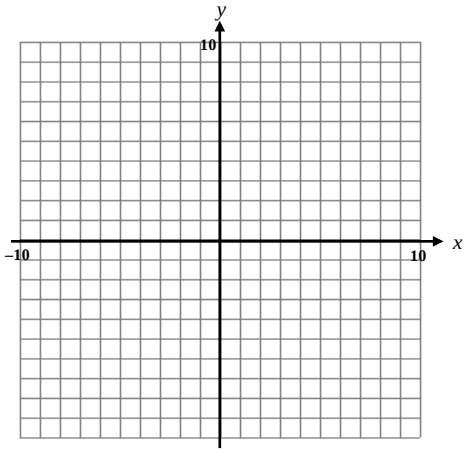


5. $y = -\sqrt{\frac{1}{4}x}$

(a) _____

(b) _____

(c)

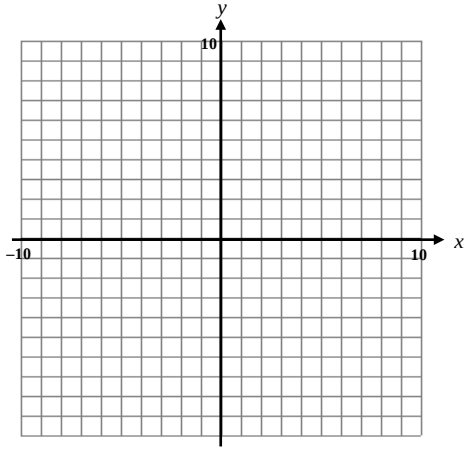


6. $y = 3\lfloor x \rfloor$

(a) _____

(b) _____

(c)

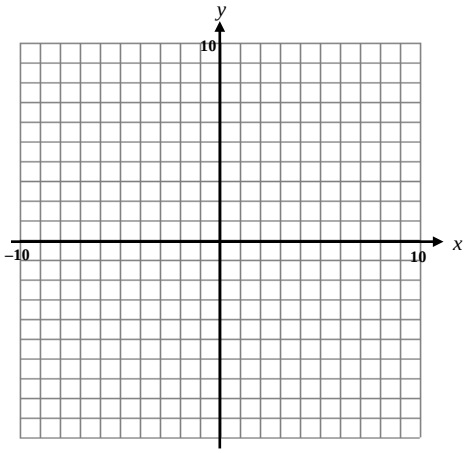


7. $y = 2^{\frac{x}{3}}$

(a) _____

(b) _____

(c)

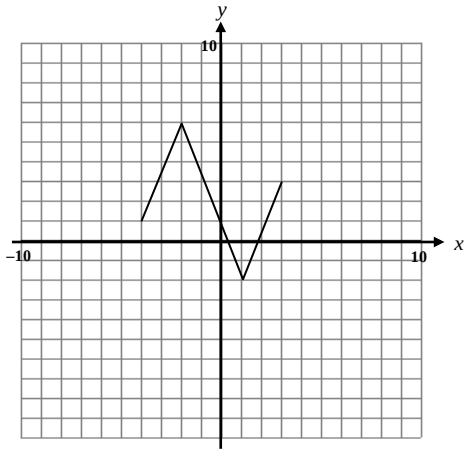


8. Use the parent drawn below.

(a) Graph the image under $S(x, y) \rightarrow (2x, \frac{1}{3}y)$

(b) List the *x* and *y* intercepts.

(c) Find the coordinates of the max. and min. points.



9. **True or False:** Under a scale change, the graphs of the preimage and the image are congruent.

10. Under a scale change with a horizontal factor *a* and vertical factor *b*, the image of (x, y) is _____.

11. Suppose $f(x) = \frac{1}{x^2}$ and $S(x, y) \to (3x, 4y)$. Give the equation of the image.

12. Describe in words the effect of $S(x, y) \to (-2x, 2y)$ on any graph. Be specific and detailed.

13. Give another name for the horizontal scale change of magnitude -1.

For questions 14 through 17, given the parent function and the transformation rule, write the equation of the image.

14. $y = |x|$
$S(x, y) \to (2x, 3y)$

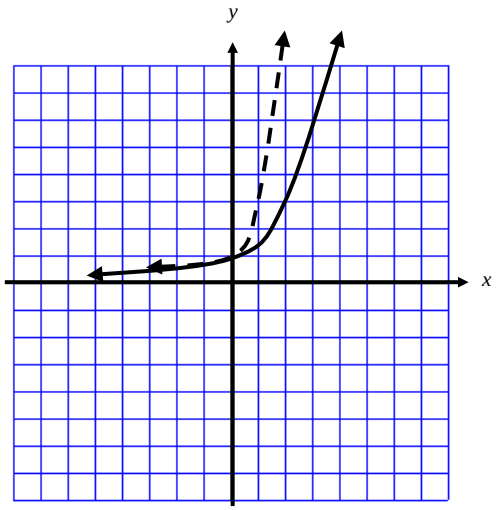
15. $y = x^3$
$S(x, y) \to \left(\frac{1}{2}x, 4y\right)$

16. $y = 2^x$
$S(x, y) \to \left(\frac{1}{4}x, \frac{1}{9}y\right)$

17. $y = x^2$
$S(x, y) \to (5x, y)$

For questions 18 and 19, write the transformation rule that maps f(x) onto the image g(x) for the given graphs below.

18.



19.