

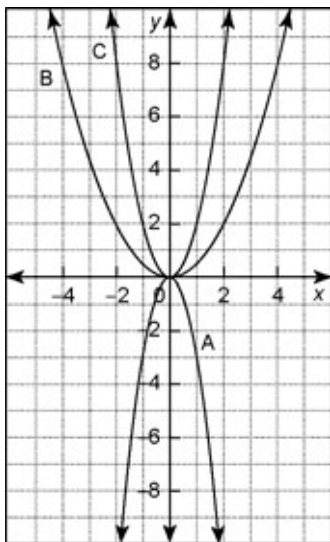
Section 1.4 Stretches of Functions

1. Match each equation to the corresponding graph.

a) $y = 0.5x^2$

b) $y = 2x^2$

c) $y = -3x^2$



2. Graph these three functions on the same set of axes. Label the graphs.

a) $f(x) = x^2$

b) $g(x) = 2x^2$

c) $h(x) = -0.25x^2$

3. Draw a graph for $y = x^2$. Then draw the graph of each transformation relative to the graph of $y = x^2$.

a) a compression by a factor of 0.5

b) a vertical stretch by a factor of 3.5

c) a reflection in the x -axis and a vertical stretch by a factor of 4

4. Write an equation for the graph that results from each transformation.

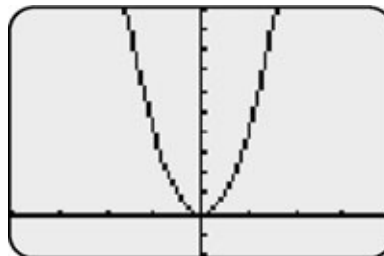
a) The graph of $f(x) = x^2$ is stretched vertically by a factor of 6.

b) The graph of $r(x) = x^2$ is compressed vertically by a factor of 0.5.

c) The graph of $t(x) = x^2$ is stretched vertically by a factor of 2 and reflected in the x -axis.

5. The point $(5, 15)$ is on the graph of the function $g(x) = ax^2$. What is the value of a ?

6. The graph of the function $h(x) = ax^2$ is shown. What is the value of a ?



7. The point $(6, 10)$ is on the graph of $y = f(x)$. What is the y -coordinate of the point on the graph of $y = 5f(x)$ if the x -coordinate is 6?

8. On Earth, the vertical distance fallen of a free-falling object is represented by the function $h(t) = 4.9t^2$, where h is the vertical distance fallen, in metres, and t is the time in seconds.

a) How far does an object fall during the first two seconds?

b) How long does it take an object to fall 100 m?

9. On Mars, the vertical distance fallen of a free-falling object is represented approximately by the function $h(t) = 3.8t^2$, where h is the vertical distance fallen, in metres, and t is the time in seconds.

a) On Mars, how far does an object fall during the first two seconds?

b) On Mars, long does it take an object to fall 50 m?

c) What transformation on the graph of $h(t) = 3.8t^2$ will give a graph that is the same as the graph of $h(t) = 4.9t^2$?