

11.2 Absolute value function

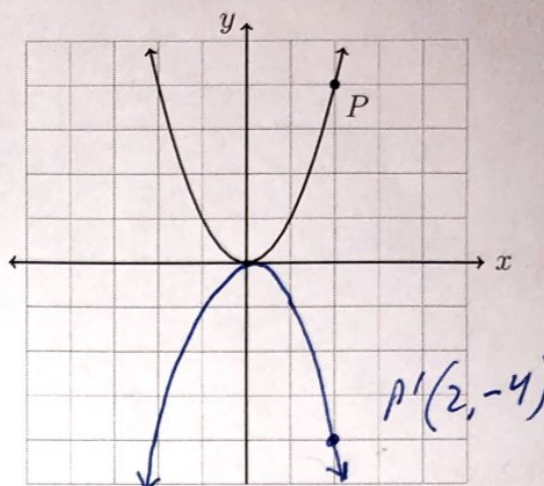
HSG.CO.A.5

1. Part of the parabola $f: y = x^2$, is shown below.

(a) Reflect f across the y -axis.

(b) Write down the coordinates of P .

(c) Mark and label the image P' with its coordinates.



2. The line \overleftrightarrow{RS} having the equation $y = \frac{2}{3}x + 2$ is shown below.

(a) Write down the slope of \overleftrightarrow{RS} ,

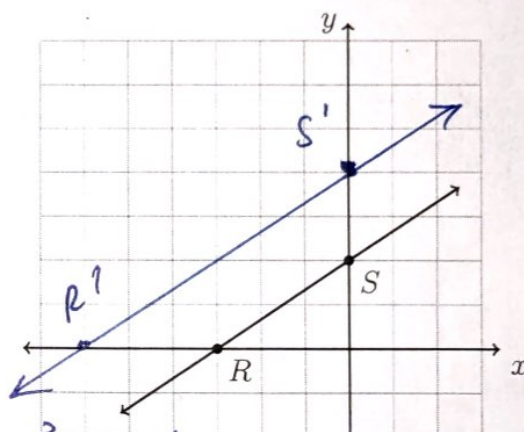
$$m = \frac{2}{3}$$

(b) Write down the y -intercept of \overleftrightarrow{RS} ,

$$b = 2$$

(c) Dilate \overleftrightarrow{RS} by a scale factor $k = 2$ centered at the origin. Mark the images R' and S' .

(d) Write down the equation of $\overleftrightarrow{R'S'}$

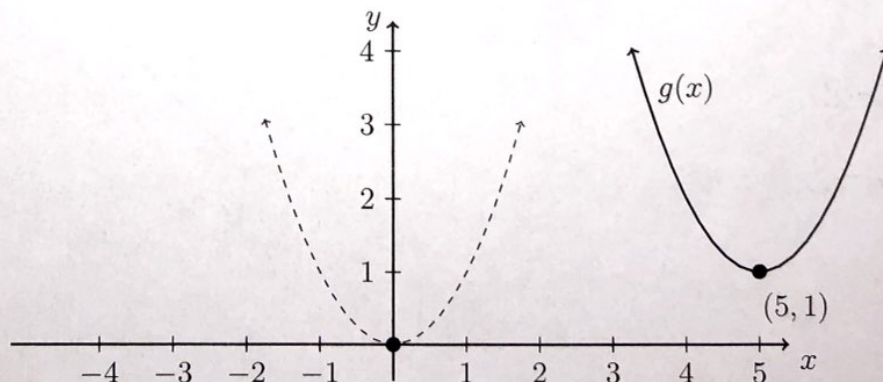


$$y = \frac{2}{3}x + 4$$

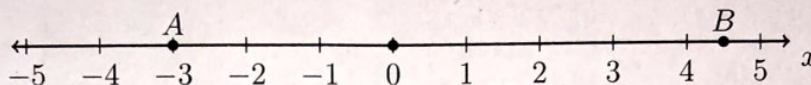
3. Write down the translation that would map $g(x)$ onto the parent function $y = x^2$. State your answer in the form $x \rightarrow x - h$, $y \rightarrow y - k$.

$$x \rightarrow x - 5$$

$$y \rightarrow y - 1$$



Definition: The *absolute value* of a real number is the distance between the number and the origin. (shown here $|A| = 3$ and $|B| = 4.5$)

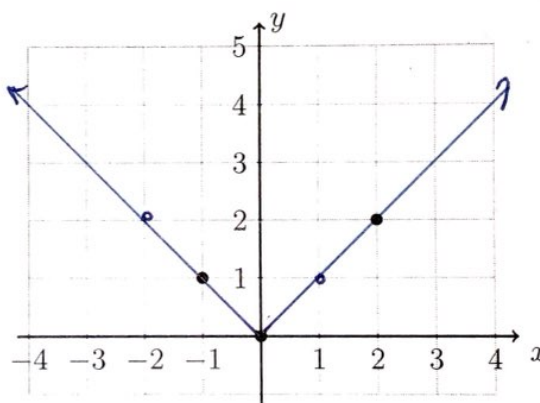


Equivalently,

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

4. Complete the t-table for the function $f: y = |x|$, plot the points, and draw f as a smooth curve.

x	$ x $
-2	2
-1	1
0	0
1	1
2	2



5. The function $g: y = |x - 2| + 3$ is plotted below as a solid line. What translation would map g onto the parent function (dotted)? State your answer in the form $x \rightarrow x - h$, $y \rightarrow y - k$.

$$x \rightarrow x - 2$$

$$y \rightarrow y - 3$$

