Unit 11: Function transformations Name:
26 April 2022

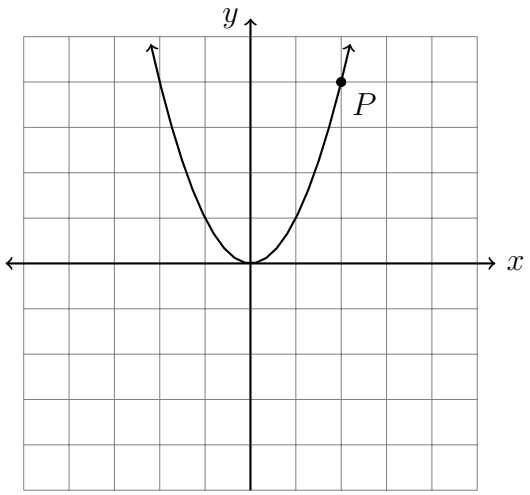
11.2 Absolute value function **HSG.CO.A.5**

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

   (a) Reflect f across the x-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 $\overleftrightarrow{RS}$,

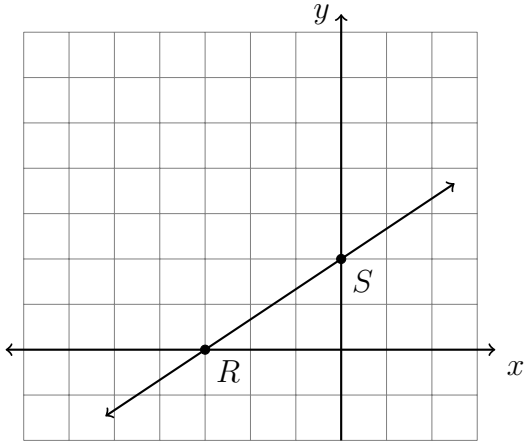
   $m =$

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

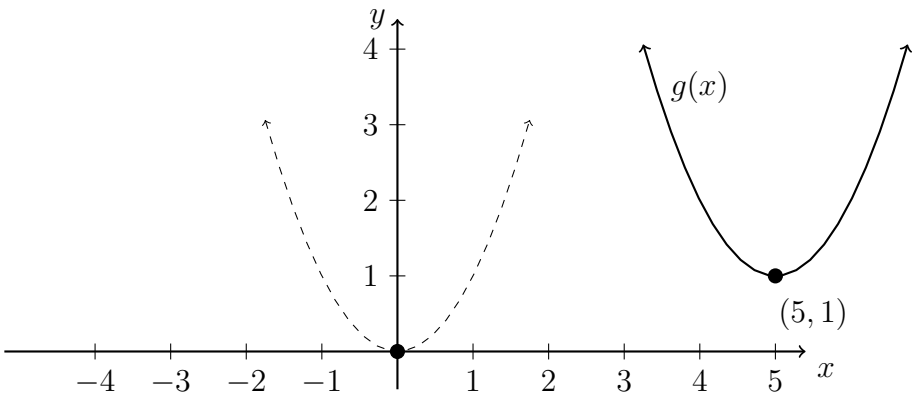
   $b =$

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

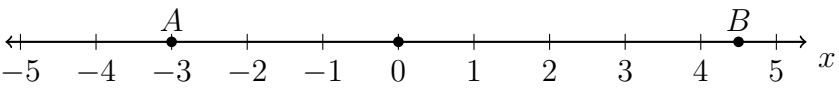
   (d) Write down the equation of $\overleftrightarrow{R'S'}$



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



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

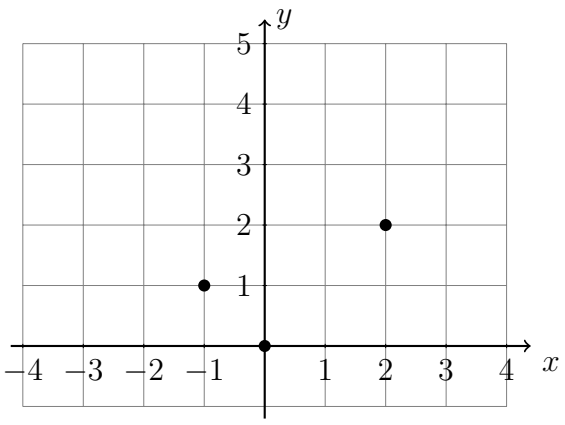


Equivalently,

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

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

x	$\lvert x\rvert$
-2	
-1	1
0	0
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 $x \to x - h$, $y \to y - k$.