

Fill in the Blanks

Stretches of Graphs

$y = f(x)$ is transformed to...	Stretches in words	$y = \sin(x)$ is transformed to...	$y = x^2(x + 1)$ is transformed to...	$(-2, 5)$ is transformed to...
$y = 3f(x)$	Stretch by a scale factor of 3 in the vertical direction	$y = 3 \sin(x)$	$y = 3x^2(x + 1)$	$(-2, 15)$
$y = f(2x)$	Stretch by a scale factor of $\frac{1}{2}$ in the horizontal direction	$y = \sin(2x)$	$y = 4x^2(2x + 1)$	$(-1, 5)$
$y = 5f(x)$	Stretch by a scale factor of 5 in the vertical direction	$y = 5 \sin(x)$	$y = 5x^2(x + 1)$	$(-2, 25)$
$y = f\left(\frac{x}{4}\right)$	Stretch by a scale factor of 4 in the horizontal direction	$y = \sin\left(\frac{x}{4}\right)$	$y = \frac{x^2}{16}\left(\frac{x}{4} + 1\right)$	$(-8, 5)$
$y = 2f(3x)$	Stretch by a scale factor of 2 in the vertical direction and by a scale factor of $\frac{1}{3}$ in the horizontal direction	$y = 2 \sin(3x)$	$y = 18x^2(3x + 1)$	$\left(-\frac{2}{3}, 10\right)$
$y = f\left(\frac{x}{10}\right)$	Stretch by a scale factor of 10 in the horizontal direction	$y = \sin\left(\frac{x}{10}\right)$	$y = \frac{x^2}{10}\left(\frac{x}{10} + 1\right)$	$(-20, 5)$
$y = 4f(x)$	Stretch by a scale factor of 4 in the vertical direction	$y = 4 \sin(x)$	$y = 16x^2(4x + 1)$	$(-2, 20)$
$y = 6f\left(\frac{2x}{3}\right)$	Stretch by a scale factor of 6 in the vertical direction and by a scale factor of $\frac{3}{2}$ in the horizontal direction	$y = 6 \sin\left(\frac{2x}{3}\right)$	$y = \frac{8x^2}{3}\left(\frac{2x}{3} + 1\right)$	$(-3, 30)$