

Describe transformations using function notation

- 1** Which function $g(x)$ shows this transformation of $f(x)$?

Vertical stretch : 3

A $g(x) = 3f(x)$

B $g(x) = f(3x)$

- 2** If the vertex of $f(x)$ is (a,b) , which function $g(x)$ would have this vertex?

$(a, 0.5 \cdot b)$

A $g(x) = f(0.5x)$

B $g(x) = 0.5f(x)$

- 3** Which function $g(x)$ shows this transformation of $f(x)$?

Horizontal compression : m

A $g(x) = m \cdot f(x)$
 $m < 1$

B $g(x) = f(m \cdot x)$
 $m < 1$

C $g(x) = f(m \cdot x)$
 $m > 1$

- 4** If the vertex of $f(x)$ is (a,b) , which function $g(x)$ would have this vertex?

$(\frac{a}{w}, b)$

A $g(x) = f(w \cdot x)$

B $g(x) = w \cdot f(x)$

- 6** How is the graph of f transformed to produce g ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

$$g(x) = f(x-4)$$

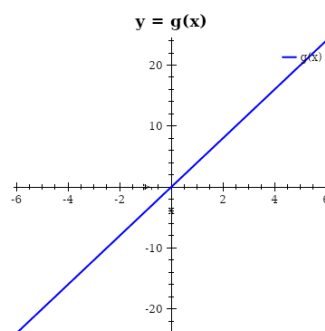
A reflect over the y-axis

B shift down by 4

C shift right by 4

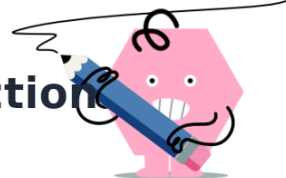
D reflect over the x-axis

- 5** Which transformed function $g(x)$ is this graph showing?



A $f(x) = x$
 $g(x) = 4f(x)$

B $f(x) = x$
 $g(x) = f(4x)$

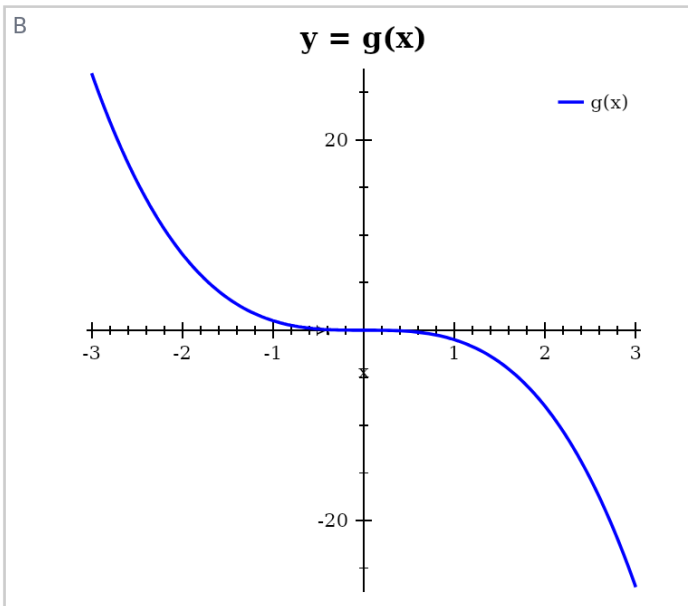
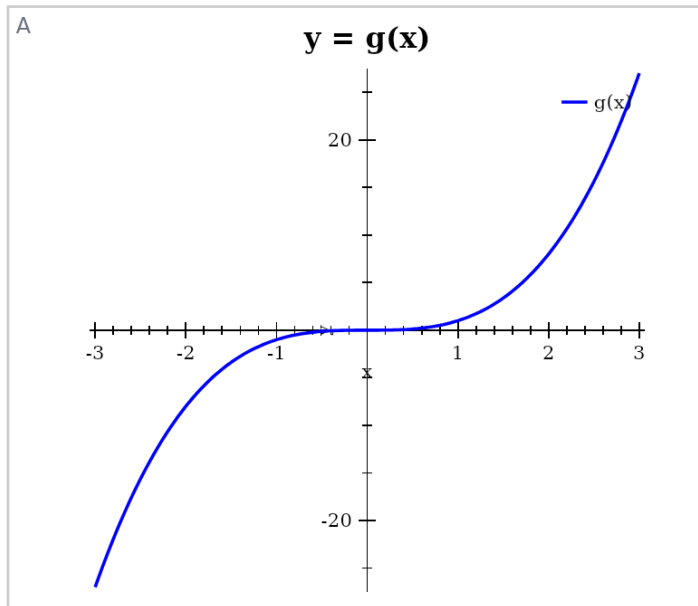


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7Which graph shows the transformation of $f(x)$ into $g(x)$?

$$f(x) = x^3$$

$$g(x) = f(-x)$$

**8**Using the mapping notation, how does this variable value transform the graph of f ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

$$h = -4$$

A shift up by 4

B shift left by 4

C shift right by 4

D reflect over the x-axis

9Which function applies this transformation to f ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

shift up by 4

A $g(x) = f(x) + 4$

B $g(x) = f(x + 4)$

10Which function applies these transformations to f ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

shift down by 2 and shift left by 3

A $g(x) = f(x - 2) + 3$

B $g(x) = f(x + 3) - 2$

11How is the graph of f transformed to produce g ?

$$g(x) = a f(b(x-h)) + k$$

$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

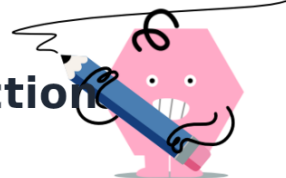
$$g(x) = f(2x) + 4$$

A vertically compress by a factor of 4 and vertically compress by a factor of 2

B shift up by 4 and horizontally compress by a factor of 2

C shift up by 4 and shift up by 2

D vertically stretch by a factor of 4 and horizontally compress by a factor of 2



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Which function $g(x)$ shows these transformations of $f(x)$?

Shift left : q

Shift down : p

A $g(x) = f(x + q) - p$

B $g(x) = f(x + q) + p$

C $g(x) = f(x - q) - p$

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Which function $g(x)$ shows these transformations of $f(x)$?

Reflect in $X - \text{Axis}$

Vertical stretch : 2

A $g(x) = -f(2x)$

B $g(x) = 2f(-x)$

C $g(x) = -2f(x)$

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If the vertex of $f(x)$ is (a, b) , which function $g(x)$ would have this vertex?

$$\left(\frac{a}{0.5}, -b\right)$$

A $g(x) = -f(0.5x)$

B $g(x) = -0.5f(x)$

C $g(x) = f(-0.5x)$