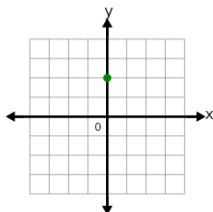




## Apply vertical and horizontal translations

**1**

Translate this point by left 1



A (-2,-1)

B (-1,2)

**2**

(2,3)

A

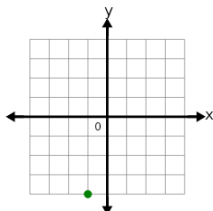
(0,3)

B

(3,0)

**3**

Translate this point by (1,0)



A (-4,0)

B (0,-4)

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

Shift down : 3

A

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

B

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

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

$$(a+2, b)$$

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

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

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

**6**If the domain of  $f(x)$  is  $[a,b]$ , which function  $g(x)$  would have this domain?

$$\left[\frac{a}{4}, \frac{b}{4}\right]$$

A

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

B

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

**7**

Using the mapping notation, which variable and value produce this transformation?

$$g(x) = a f(b(x-h)) + k$$
$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

shift up by 2

A  $h = 2$ B  $k = 2$ C  $a = 2$ D  $a = -2$ **8**How is the graph of  $f$  transformed to produce  $g$ ?

$$g(x) = a f(b(x-h)) + k$$
$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

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

A shift left by 2

B horizontally compress by a factor of 2

C shift up by 2

D shift down by 2

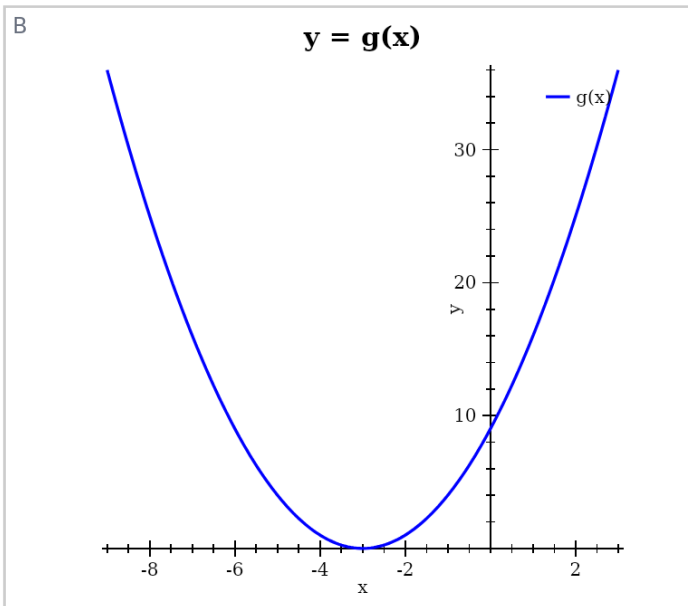
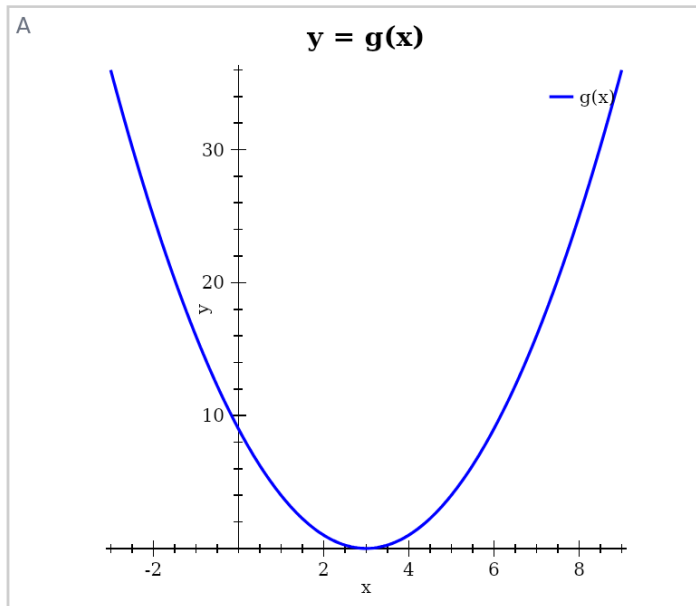
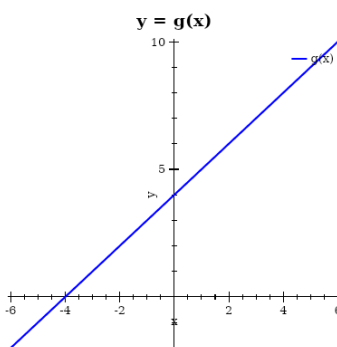


## Apply vertical and horizontal translations

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

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

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

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

A

$$f(x) = x$$

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

B

$$f(x) = x$$

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



## Apply vertical and horizontal translations

**11**Which function applies this transformation to  $f$ ?

$$g(x) = a f(b(x-h)) + k$$
$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

horizontally compress by a factor of 3

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

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

**12**Which 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 right by 3 and shift up by 2

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

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

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

Vertical stretch : 4

Shift left : 4

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

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

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

**14**How is the graph of  $f$  transformed to produce  $g$ ?

$$g(x) = a f(b(x-h)) + k$$
$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

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

A shift right by 4 and reflect over the y-axis

B reflect over the y-axis and shift up by 2

C vertically stretch by a factor of 4 and shift up by 2

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

**15**What does this transformation produce in  $f(x)$ ?

$$g(x) = -f(z \cdot x)$$
$$z < 1$$

A  
Reflect in Y – Axis  
Horizontal stretch :  $z$ B  
Reflect in X – Axis  
Vertical stretch :  $z$ C  
Reflect in X – Axis  
Horizontal stretch :  $z$ **16**What does this transformation produce in  $f(x)$ ?

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

A  
Reflect in X – Axis  
Shift up : 2B  
Reflect in Y – Axis  
Shift down : 2C  
Reflect in X – Axis  
Shift down : 2