

Describe combined transformations of a function

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

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

A

Shift left : 2

B

Shift right : 2

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

Shift left : 5

A

$$g(x) = f(x - 5)$$

B

$$g(x) = f(x + 5)$$

- 3** If the vertex of $f(x)$ is (a, b) , what is the vertex of $g(x)$?

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

A

$$(a + r, b)$$

B

$$(a - r, b)$$

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

$$(a, b + 3)$$

A

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

B

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

C

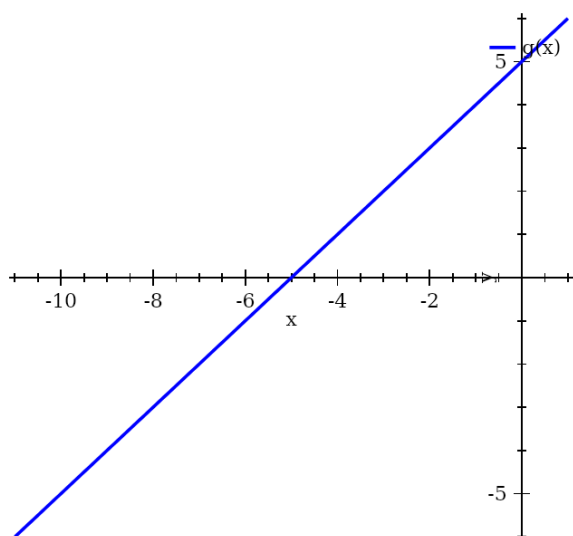
$$g(x) = f(x) + 3$$

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

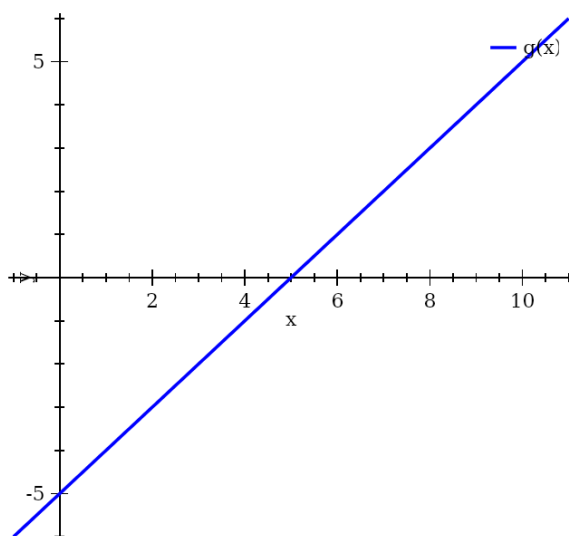
$$f(x) = x$$

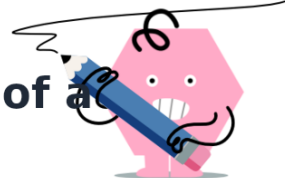
$$g(x) = f(x - 5)$$

A

 $y = g(x)$ 

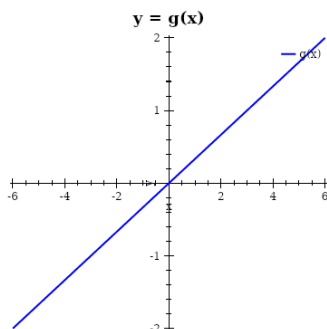
B

 $y = g(x)$ 



Describe combined transformations of a function

6

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

A

$$f(x) = x$$

$$g(x) = 0.33f(x)$$

B

$$f(x) = x$$

$$g(x) = f(0.33x)$$

9

Which function applies this transformation to f ?

$$g(x) = af(b(x-h)) + k$$

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

vertically stretch by a factor of 4

A

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

B

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

11

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

Reflect in Y – Axis

Shift right : 3

A

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

B

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

C

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

7

How is the graph of f transformed to produce g ?

$$g(x) = af(b(x-h)) + k$$

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

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

A shift up by 3

B shift left by 3

C shift right by 3

D reflect over the x-axis

8

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

$$g(x) = af(b(x-h)) + k$$

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

$$k = -3$$

A shift right by 3

B reflect over the x-axis

C reflect over the y-axis

D shift down by 3

10

If the vertex of $f(x)$ is (a, b) , what is the vertex of $g(x)$?

$$g(x) = f(-x + 5)$$

A

$$(-(a + 5), b)$$

B

$$(a - 5, -b)$$

C

$$(-(a - 5), b)$$

12

Which function applies these transformations to f ?

$$g(x) = af(b(x-h)) + k$$

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

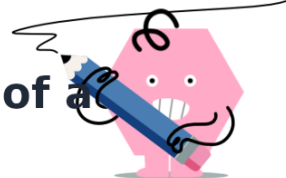
vertically stretch by a factor of 3 and horizontally compress by a factor of 2

A

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

B

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



Describe combined transformations of a function

13

 How is the graph of f transformed to produce g ?

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

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

$$g(x) = 4f(x) + 3$$

- | | | | |
|--|--|---|---|
| A horizontally stretch by a factor of 3 and vertically compress by a factor of 4 | B shift up by 3 and horizontally compress by a factor of 4 | C shift left by 3 and vertically stretch by a factor of 4 | D shift up by 3 and vertically stretch by a factor of 4 |
|--|--|---|---|

15

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

$$g(x) = f(0.33x + 4)$$

A
Horizontal stretch : 0.33
Shift left : 4

B
Horizontal stretch : 0.33
Shift right : 4

C
Vertical stretch : 0.33
Shift left : 4

17

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

$$(a, r \cdot b - n)$$

A $g(x) = r \cdot f(x) + n$

B $g(x) = r \cdot f(x) - n$

C $g(x) = f(r \cdot x) - n$

14

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

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

A
Reflect in X – Axis
Shift down : r

B
Reflect in Y – Axis
Shift down : r

C
Reflect in X – Axis
Shift up : r

16

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