

Function Transformations and Compositions

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

Reflect in Y – Axis

Vertical stretch : 3

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

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

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

- 2 Reflect point $(-4,4)$ across the Y axis

$(-4,4)$

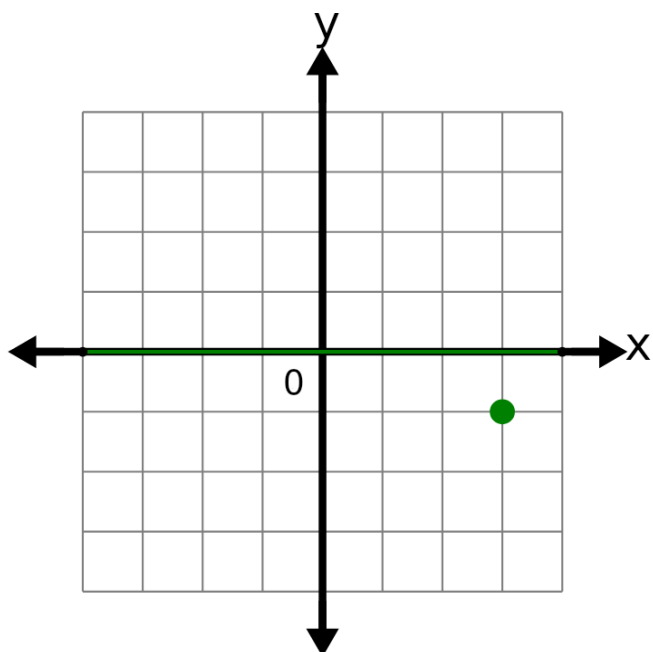
A

$(-4,4)$

B

$(4,4)$

- 3 Reflect this point across the X axis



A

$(-1,3)$

B

$(3,1)$

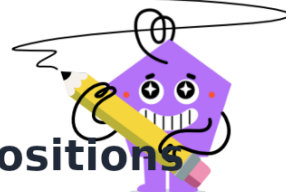
- 4 If the vertex of $f(x)$ is (a,b) , what is the vertex of $g(x)$?

$$g(x) = 5f(x) - 2$$

A $(\frac{a}{5}, b - 2)$

B $(a, 5 \cdot b + 2)$

C $(a, 5 \cdot b - 2)$



Function Transformations and Compositions

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

$$g(x) = z \cdot f(n \cdot x)$$

$$z < 1$$

$$n > 1$$

A

Vertical compression : n
Horizontal compression : z

B

Vertical compression : z
Horizontal compression : n

C

Vertical stretch : z
Horizontal compression : n

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

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

A

$$(-a, b)$$

B

$$(a, -b)$$

- 7 If the range of $f(x)$ is $[a,b]$, what is the range of $g(x)$?

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

A

$$[-b, -a]$$

B

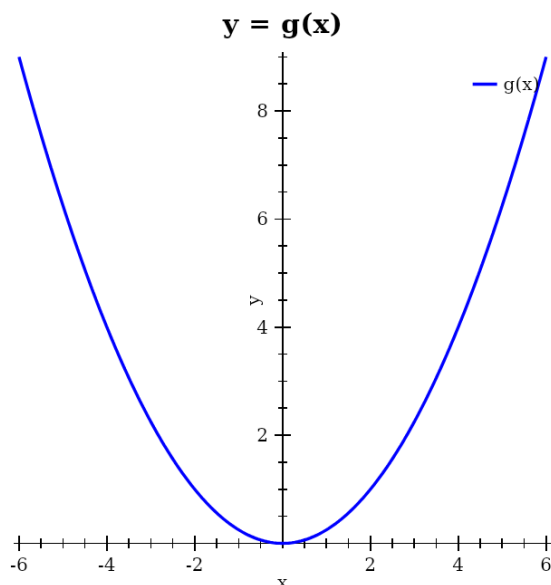
$$[a, b]$$

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

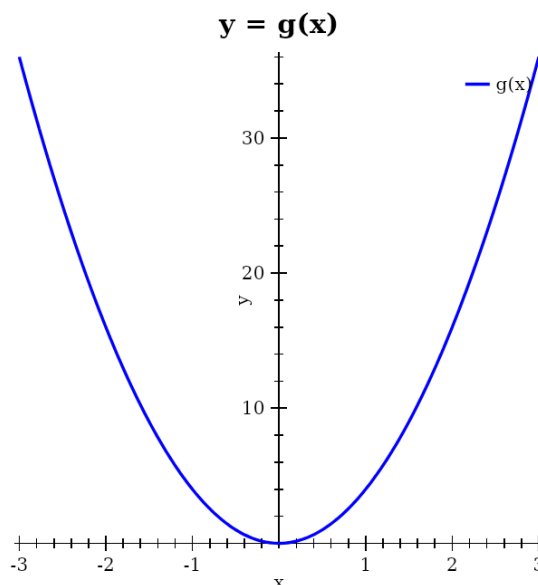
$$f(x) = x^2$$

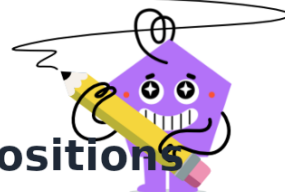
$$g(x) = 0.25f(x)$$

A



B





Function Transformations and Compositions

9 Which function applies these transformations to f ?

A

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

B

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

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

A

shift down by 2 and shift right by 3

B

vertically stretch by a factor of 2 and shift down by 3

C

reflect over the x-axis and horizontally compress by a factor of 3

D

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

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

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

A

Reflect in Y – Axis
Vertical compression : 0.33

B

Reflect in X – Axis
Vertical compression : 0.33

C

Reflect in X – Axis
Vertical stretch : 0.33

12 Find the composite function of $n(r(x))$?

A

$$n(r(x)) = 3 \cdot (-5 \cdot x - 3) + 5$$

B

$$n(r(x)) = -5 \cdot (3 \cdot x + 5) - 3$$

13 Which set describes the domain of this function composition?

A

$$\{x \in \mathbb{R} | -2 < x < 2 \text{ or } -2 \leq x < 2\}$$

B

$$\{x \in \mathbb{R} | x < 2 \text{ or } 2 < x\}$$

14 Which set describes the domain of this function composition?

A

$$\{X \in \mathbb{R} | X < 2\}$$

B

$$\{X \in \mathbb{R} | 2 < X\}$$

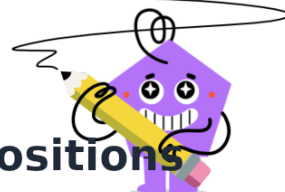
15 Which set describes the domain of this function composition?

A

$$\{X \in \mathbb{R} | -2 < X < -1\}$$

B

$$\{X \in \mathbb{R} | -2 \leq X < -1\}$$

**Function Transformations and Compositions****16** Which function $g(x)$ shows these transformations of $f(x)$?Horizontal compression : m Shift left : t

A

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

B

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

C

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

17 Is $z(x)$ the inverse of $n(x)$

A

No

B

Yes

18 Is $y(x)$ the inverse of $y(x)$

A

No

B

Yes

19 Find the inverse function of $d(x)$

A

$$d^{-1}(x) = \sqrt{\frac{x}{5}}$$

B

$$d^{-1}(x) = -\sqrt{\frac{x}{5}}$$

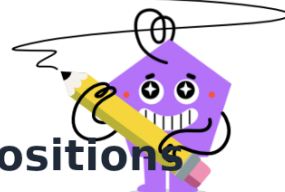
20 Find the inverse function of $y(x)$

A

$$y^{-1}(x) = \frac{\log_2(4 + 5x)}{x}$$

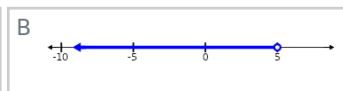
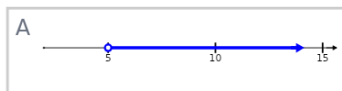
B

$$y^{-1}(x) = \frac{\log_2(x + 5)}{4}$$



Function Transformations and Compositions

21 Which number line shows the domain of this function composition?



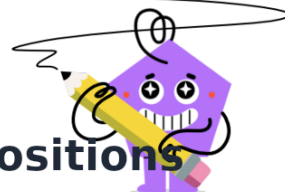
22 Which set describes the domain of this function composition?

A

$$\{X \in \mathbb{R} | X \leq 1\}$$

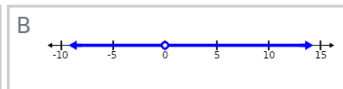
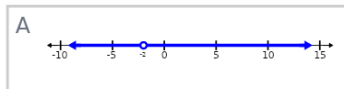
B

$$\{X \in \mathbb{R} | 1 \leq X\}$$

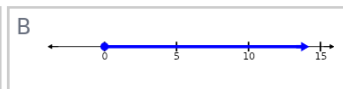
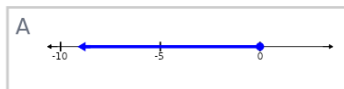


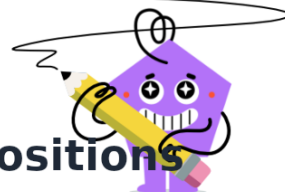
Function Transformations and Compositions

23 Which number line shows the domain of this function composition?



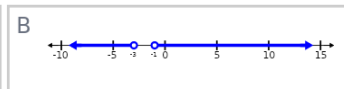
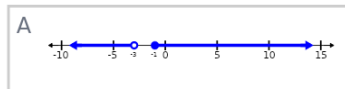
24 Which number line shows the domain of this function composition?



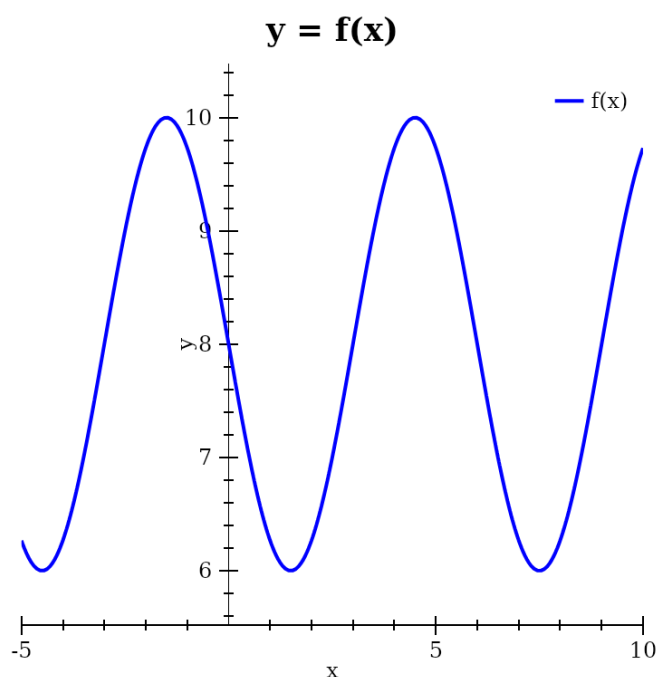


Function Transformations and Compositions

25 Which number line shows the domain of this function composition?



26 Which function would have a graph with this vertical shift?



A

$$f(x) = -2\sin\left(\frac{1}{3}\pi x\right) + 1$$

B

$$f(x) = -2\sin\left(\frac{1}{3}\pi x\right) + 2$$

C

$$f(x) = -2\sin\left(\frac{1}{3}\pi x\right) + 8$$

D

$$f(x) = -2\sin\left(\frac{1}{3}\pi x\right) - 5$$