

## Describing Transformations

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**Describe all of the transformations in each function.**

$$1) y = \frac{1}{4} \sin \left( \frac{\theta}{8} + \frac{3\pi}{2} \right) + 2$$

$$2) y = 2 + \frac{1}{4} \sin \left( \frac{\theta}{6} + \frac{\pi}{3} \right)$$

$$3) y = -\sin \left( 2\theta - \frac{\pi}{3} \right)$$

$$4) y = 8 \sin \left( 8\theta - \frac{\pi}{6} \right) + 2$$

$$5) y = \cos \left( \theta + \frac{\pi}{4} \right)$$

$$6) y = 9 \sin \left( \frac{\theta}{7} + \frac{\pi}{3} \right) + 4$$

$$7) y = \frac{1}{2} \sin \left( -6\theta - \frac{2\pi}{3} \right) + 1$$

$$8) y = -\frac{1}{6} \cos \left( 6\theta + \frac{5\pi}{6} \right) - 5$$

$$9) y = 6 \cos \left( \frac{\theta}{2} + \frac{\pi}{2} \right) - 3$$

$$10) y = \cos \left( \theta + \frac{\pi}{6} \right) - 5$$

**Write an equation that would have the transformations described.**

11) Amplitude of 5.

Period of  $3\pi$ .

Horizontal shift left  $\frac{\pi}{2}$

Vertical shift up 1

12) Amplitude of 1.

Period of  $5\pi$ .

Horizontal shift right  $\frac{3\pi}{4}$

Vertical shift up 6

Reflection over the x-axis

13) Amplitude of 10.

Period of  $\frac{\pi}{3}$ .

Horizontal shift right  $\frac{3\pi}{2}$

Reflection over the y-axis

14) Amplitude of 3.

Period of  $\pi$ .

Horizontal shift left  $\frac{\pi}{6}$

Vertical Shift down 4

15) Amplitude of 12.

Period of  $\frac{2\pi}{3}$ .

Horizontal shift left  $5\pi$

Vertical Shift down 10

16) Amplitude of 3.

Period of  $\frac{3\pi}{4}$ .

Horizontal shift right  $\frac{3\pi}{5}$

Vertical Shift up 2

Reflection over the x-axis

## Answers to Describing Transformations

1) Amplitude:  $\frac{1}{4}$

Period:  $16\pi$

5) Amplitude: 1

Period:  $2\pi$

9) Amplitude: 6

Period:  $4\pi$

2) Amplitude:  $\frac{1}{4}$

Period:  $12\pi$

6) Amplitude: 9

Period:  $14\pi$

10) Amplitude: 1

Period:  $2\pi$

3) Amplitude: 1

Period:  $\pi$

7) Amplitude:  $\frac{1}{2}$

Period:  $\frac{\pi}{3}$

4) Amplitude: 8

Period:  $\frac{\pi}{4}$

8) Amplitude:  $\frac{1}{6}$

Period:  $\frac{\pi}{3}$

11) The dot next to the choice indicates that it is the answer.

12) The dot next to the choice indicates that it is the answer.

13) The dot next to the choice indicates that it is the answer.

14) The dot next to the choice indicates that it is the answer.

15) The dot next to the choice indicates that it is the answer.

16) The dot next to the choice indicates that it is the answer.