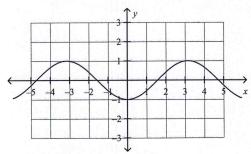
PC 12 Chapter 5 Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. Which function, where x is in radians, is represented by the graph shown below?



A.
$$y = -\cos x$$

B.
$$y = \sin x$$

C.
$$y = \cos x$$

$$\mathbf{D.} \quad y = -\sin x$$

2. The range (in radians) of the graph of $y = \cos x$ is

A.
$$-1 \le y \le 1$$

C.
$$y \in R$$

B.
$$0 \le y \le 2\pi$$

D.
$$-2\pi \le y \le 2\pi$$

- 3. The period (in degrees) of the graph of $y = \cos 4x$ is
 - **A.** 270°

C. 90°

B. 180°

D. 45°

4. The amplitude and period (in degrees) of $y = -2 \sin 5x$ are

A. amplitude =
$$\frac{1}{5}$$

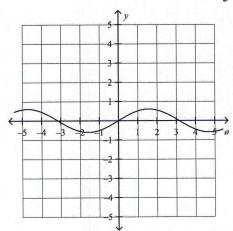
C. amplitude =
$$-\frac{1}{5}$$

B. amplitude = 2 period =
$$72^{\circ}$$

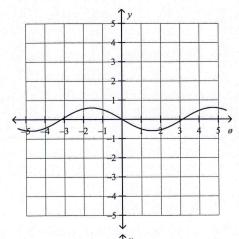
D. amplitude =
$$-2$$
 period = 90°

5. Which graph represents the function $y = \frac{3}{5} \sin(-\theta)$, where θ is in radians?

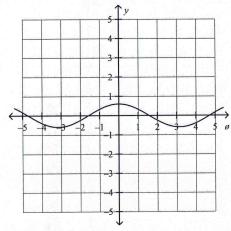
A.

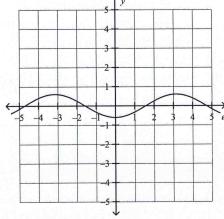


C.



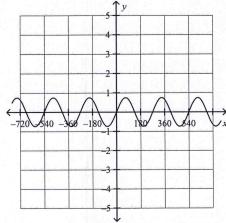
B.



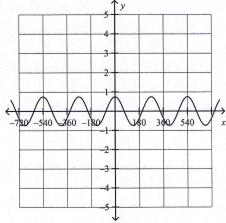


6. Which graph represents the function $y = \frac{3}{4}\cos(-\frac{4}{3}x)$, where x is in degrees?

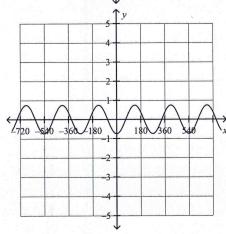
A.

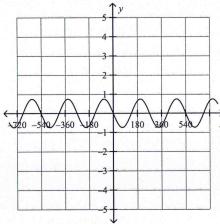


0

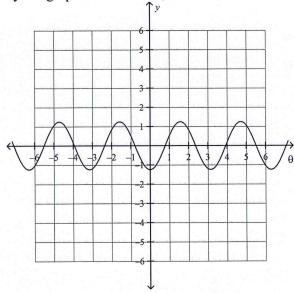


B.





7. Which function is represented by the graph shown below, where θ is in radians?



A.
$$y = -\frac{5}{4}\sin(-2x)$$

B. $y = -2\sin(-\frac{5}{4}x)$

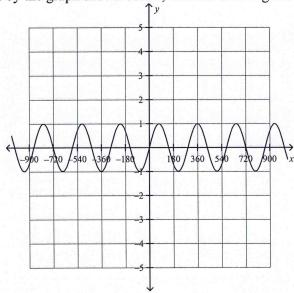
B.
$$y = -2\sin(-\frac{5}{4}x)$$

C.
$$y = -2\cos(-\frac{5}{4}x)$$

C.
$$y = -2\cos(-\frac{5}{4}x)$$

D. $y = -\frac{5}{4}\cos(-2x)$

8. Which function is represented by the graph shown below, where x is in degrees?



- $\mathbf{A.} \quad y = \sin(\frac{5}{4}x)$
- $\mathbf{B.} \quad y = \frac{5}{4} \cos(x)$

- $\mathbf{C.} \quad y = \cos(\frac{5}{4}x)$
- $\mathbf{D.} \quad y = \frac{5}{4} \sin(x)$
- 9. The graph of $y = \sin x$ can be obtained by translating the graph of $y = \cos x$
 - A. $\frac{\pi}{4}$ units to the right

C. $\frac{\pi}{3}$ units to the right

B. $\frac{\pi}{2}$ units to the right

- **D.** π units to the right
- 10. What is the amplitude of the sinusoidal function $y = 7 \sin \left(-8 \left(x \frac{\pi}{3} \right) \right) 5$?
 - A. $\frac{\pi}{3}$

C. -5

B. −8

Name:

11. What is the period of the sinusoidal function $y = -\cos\left(8\left(x - \frac{\pi}{2}\right)\right) - 2?$

A. $\frac{1}{8}\pi$

B. 4π

C. $\frac{1}{4}\pi$ **D.** $\frac{1}{2}\pi$

12. Determine the phase shift of the sinusoidal function $y = -6 \sin \left(5 \left(x - \frac{\pi}{3} \right) \right) + 2$.

A. $\frac{\pi}{3}$ units to the right

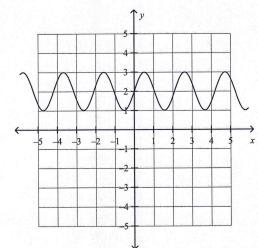
C. $\frac{\pi}{3}$ units to the left

B. 3π units to the left

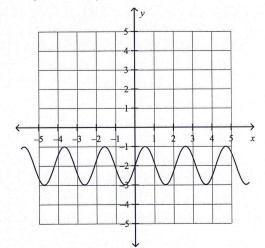
D. 3π units to the right

13. Which graph represents the sinusoidal function $y = \cos\left(3\left(x + \frac{\pi}{6}\right)\right) - 2$?

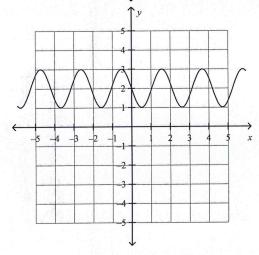
A.

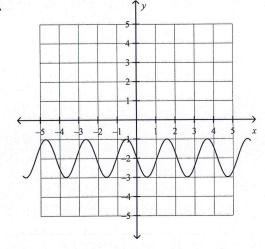


C.



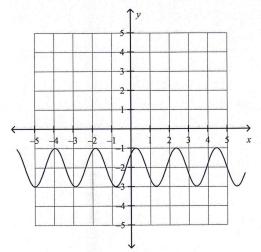
B.



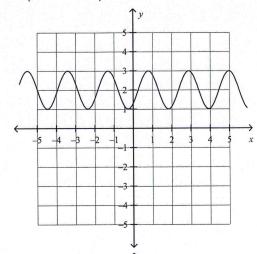


14. Which graph represents the sinusoidal function $y = \sin\left(-3\left(x + \frac{\pi}{4}\right)\right) + 2$?

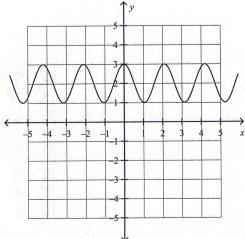
A.



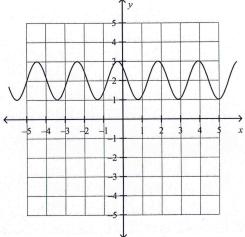
C.



В.



D.



____ 15. Give an equation for a transformed sine function with an amplitude of $\frac{5}{8}$, a period of $\frac{4}{5}$, a phase shift of $\frac{3}{2}$ rad to the right, and a vertical translation of 9 units down.

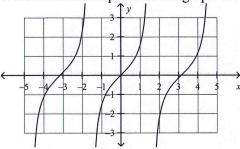
A.
$$y = \frac{5}{8} \sin[5/2(x+3/2)] - 9$$

C.
$$y = \frac{5}{8} \sin[5/2(x-3/2)] - 9$$

B.
$$y = \frac{5}{8} \sin \frac{5}{2} \pi (x + 3/2) - 9$$

D.
$$y = \frac{5}{8} \sin \frac{5}{2} \pi (x - 3/2) - 9$$

16. Which function represents the graph shown, where *x* is in radians?



- $\mathbf{A.} \quad \mathbf{y} = \tan x$
- **B.** $y = \cos x$

- $\mathbf{C.} \quad y = -\tan x$
- **D.** $y = \sin x$
- 17. Which of the following is not an asymptote of the function $f(\theta) = \tan \theta$?
 - **A.** $x = -\frac{7}{2}\pi$

C. $x = -\frac{5}{2}\pi$

B. $x = -\frac{9}{2}\pi$

- $\mathbf{D.} \quad x = -\pi$
- 18. Which function has zeros only at $\theta = n\pi, n \in \mathbb{I}$?
 - $A. \quad y = \tan(\theta + \frac{2}{3}\pi)$

 $\mathbf{C.} \quad y = \tan(\theta - \frac{7}{6}\pi)$

B. $y = \tan(\theta - \pi)$

- $\mathbf{D.} \quad y = \tan(\theta + \frac{5}{4}\pi)$
- 19. Given the trigonometric function $y = \tan \theta$, which is the x-coordinate at which the function is undefined?
 - **A.** $\frac{9}{2}\pi$

C. $-\frac{1}{3}\pi$

B. $-\frac{7}{6}\pi$

- **D.** $\frac{3}{4}\pi$
- **20.** Find the value of the y-coordinate of the point with x-coordinate = 1 on the unit circle, and the point is on the terminal arm of $\theta = -660^{\circ}$ in standard position.
 - A. $\sqrt{3}$

C. 1

B. -1

D. undefined

Use the following information to answer the questions.

The height, h, in metres, above the ground of a car as a Ferris wheel rotates can be modelled by the function $h(t) = 18\cos\left(\frac{\pi t}{80}\right) + 19$, where t is the time, in seconds.

- 21. What is the radius of the Ferris wheel?
 - A. 9 m
 - **B.** 18 m

- **C.** 19 m
- **D.** 36 m
- 22. How long does it take for the wheel to revolve once?
 - A. $\frac{\pi}{80}$ s

C. 160 s

B. 80 s

- **D.** $\frac{80}{\pi}$ s
- 23. What is the maximum height of a car?
 - **A.** 19 m

C. 160 m

B. 80 m

D. 37 m

Use the following information to answer the questions.

The height, h, in centimetres, of a piston moving up and down in an engine cylinder can be modelled by the function $h(t) = 14 \sin(80\pi t) + 14$, where t is the time, in seconds.

- ___ 24. What is the piston's minimum height?
 - **A.** 14 cm
 - **B.** −14 cm

- **C.** 0 cm
- **D.** 7 cm

- 25. What is the period?
 - **A.** $\frac{7}{40}$ s

C. $\frac{1}{40}$ s

B. 8 s

D. $\frac{1}{14}$ s