

Multiple Choice

For Exercises 1–3, choose the correct letter.

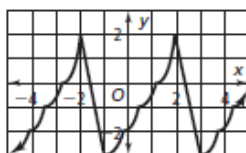
1. Which pair of coordinates names one complete cycle of the periodic function?
- D**

(A) $(-5, -3)$ to $(-2, 2)$

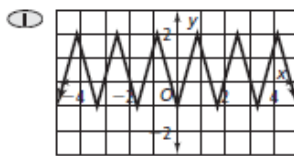
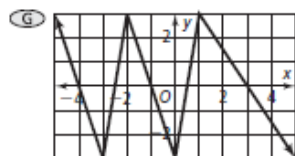
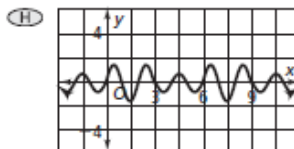
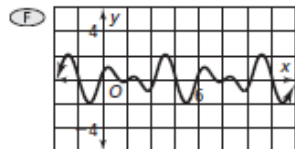
(C) $(-2, 2)$ to $(-1, -3)$

(B) $(-5, -3)$ to $(5, 0)$

(D) $(-1, -3)$ to $(3, -3)$



2. Which graph is NOT the graph of a periodic function?
- G**



3. A periodic function has a period of 12 s. How many cycles does it go through in 40 s?
- A**

(A) $3\frac{1}{3}$ cycles

(B) $\frac{3}{10}$ cycle

(C) 28 cycles

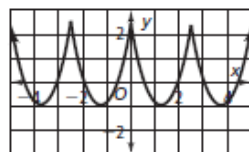
(D) 480 cycles

Short Response

4. The graph at the right represents a periodic function.

a. What is the period of the function?

b. What is the amplitude of the function?

[2] a. 2.5 b. 1.75**[1] incorrect period OR incorrect amplitude****[0] no answers given**

Multiple Choice

For Exercises 1–4, choose the correct letter.

1. Which angle, in standard position, is coterminal with an angle in standard position measuring
- 152°
- ?
- D**

(A) 28°

(B) 62°

(C) -152°

(D) -208°

2. Which could be the measure of an angle
- θ
- where
- $\sin \theta$
- is
- $-\frac{\sqrt{3}}{2}$
- ?
- G**

(F) -330°

(G) 240°

(H) 60°

(I) 150°

3. An angle in standard position intersects the unit circle at
- $(0, -1)$
- . Which could be the measure of the angle?
- C**

(A) 90°

(B) -270°

(C) -450°

(D) 540°

4. What are the coordinates of the point where the terminal side of a
- 135°
- angle intersects the unit circle?
- F**

(F) $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

(G) $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

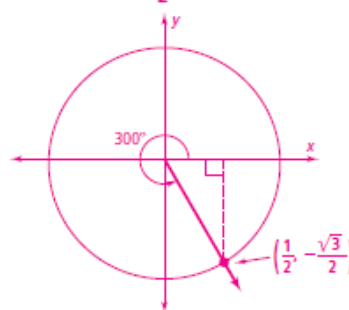
(H) $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

(I) $(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

Short Response

5. What is the exact value of
- $\sin(300^\circ)$
- ? Show your work.

[2] $\sin(300^\circ) = -\frac{\sqrt{3}}{2}$

**[1] incorrect answer OR incorrect work OR work not shown****[0] incorrect answers and no work shown OR answers not given**

13-3

Standardized Test Prep

Radian Measure

Multiple Choice

For Exercises 1–4, choose the correct letter.

- Which angle measure is equivalent to $\frac{4\pi}{3}$ radians? **D**
 (A) 60° (B) 120° (C) 135° (D) 240°
- If $\sin \theta = \frac{\sqrt{3}}{2}$, which could be the value of θ ? **F**
 (F) $\frac{2\pi}{3}$ radians (G) $\frac{3\pi}{4}$ radians (H) $\frac{4\pi}{3}$ radians (I) $\frac{3\pi}{2}$ radians
- In a circle with a 12 mm radius, a central angle measuring $\frac{7\pi}{6}$ radians intercepts an arc. What is the length of the arc? **D**
 (A) $\frac{2\pi}{7}$ mm (B) $\frac{72\pi}{7}$ mm (C) 12π mm (D) 14π mm
- Circle X has a central angle of $\frac{3\pi}{8}$ radians intercepting an arc 3π ft long. Circle Y has a central angle of $\frac{3\pi}{4}$ radians intercepting an arc 3π ft long. Which best describes the radii of circle X and circle Y ? **G**
 (F) The radius of circle X is half as long as the radius of circle Y .
 (G) The radius of circle X is twice as long as the radius of circle Y .
 (H) The radius of circle X is the same length as the radius of circle Y .
 (I) The radius of circle X is more than twice as long as the radius of circle Y .

Short Response

- Describe the relationship between the total number of radians in a circle and the circumference of the circle.
[2] A central angle measuring 1 radian intercepts an arc the same length as the radius of the circle. Because the circumference of a circle is $2\pi r$, there are 2π radians in a circle.
[1] incomplete explanation
[0] no answer given

13-4

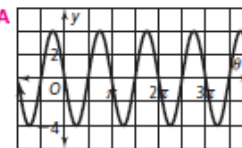
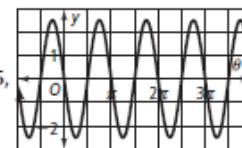
Standardized Test Prep

The Sine Function

Multiple Choice

For Exercises 1–5, choose the correct letter.

- Which expressions have the same value? **C**
 I. $\sin(-30^\circ)$ II. $\sin 390^\circ$ III. $\sin 30^\circ$
 (A) I and II (B) I and III (C) II and III (D) I, II, and III
- What is the period of the function $y = -\frac{2}{5}\sin 6\pi\theta$? **F**
 (F) $\frac{1}{3}$ (G) $\frac{2}{5}$ (H) $\frac{1}{3}\pi$ (I) 6π
- Which function has an amplitude of 3 and a period of 3π ? **D**
 (A) $y = \frac{2}{3}\sin 3\theta$ (B) $y = \frac{3}{2}\sin \frac{2}{3}\theta$ (C) $y = 3\sin 3\pi\theta$ (D) $y = 3\sin \frac{2}{3}\theta$
- What is the amplitude and period of the sine curve shown at the right? **I**
 (F) amplitude -2.5 , period 4π (H) amplitude -2.5 , period π
 (G) amplitude 2.5 , period $\frac{3}{2}\pi$ (I) amplitude 2.5 , period π
- Which function represents the sine curve shown at the right? **A**
 (A) $y = -4\sin 2\theta$ (C) $y = -4\sin\theta$
 (B) $y = 4\sin \pi\theta$ (D) $y = 4\sin 2\pi\theta$



Extended Response

- The function $y = \frac{2}{3}\sin \frac{7\pi}{9}\theta$ represents a sine curve. Find the amplitude of the sine curve and its period in radians. Show your work.
[4] amplitude: $\frac{2}{3}$; period: $\frac{2\pi}{b} = \frac{2\pi}{\frac{7\pi}{9}} = 2\pi \cdot \frac{9}{7\pi} = 2\frac{4}{7}$
[3] appropriate methods, but with one computational error
[2] incorrect amplitude with correct period OR correct amplitude with period calculated incorrectly
[1] correct amplitude and period, without work shown
[0] incorrect answers and no work shown OR no answers given