Honors Unit 7 Review

Name: _____ **Date:** _____

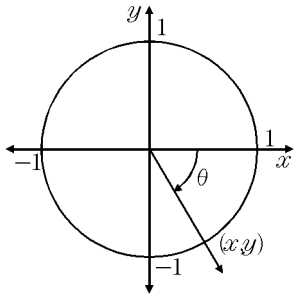
1. In the accompanying diagram of a unit circle, the ordered pair (x, y) represents the point where the terminal side of θ intersects the unit circle. If $\theta = -\frac{\pi}{3}$, what is the value of y?

A. $-\frac{\sqrt{3}}{2}$

B. $-\frac{\sqrt{2}}{2}$

C. $-\sqrt{3}$

D. $-\frac{1}{2}$



2. In standard position, an angle of $\frac{7\pi}{3}$ radians has the same terminal side as an angle of

A. 60° B. 120°

C. 240° D. -420°

3. An object that weighs 5 pounds is suspended in a liquid. When the object is depressed 2.5 feet from its equilibrium point, it will oscillate according to the formula x = $x = -2.5cos(\frac{2\pi}{3}\theta)$ where t is the number of seconds after the object is released. How many seconds are in the period of oscillation?

A. $\frac{\pi}{4}$ B. π C. 3 D. 2π

4. Find the exact value of $sec(-810^\circ)$

A. 1 B. -1

C. 0 D. undefined

5. What is the value of $\tan\frac{\pi}{3} + \cos\pi$?

A. $\frac{\sqrt{3}+3}{3}$ B. $\frac{\sqrt{3}-3}{3}$

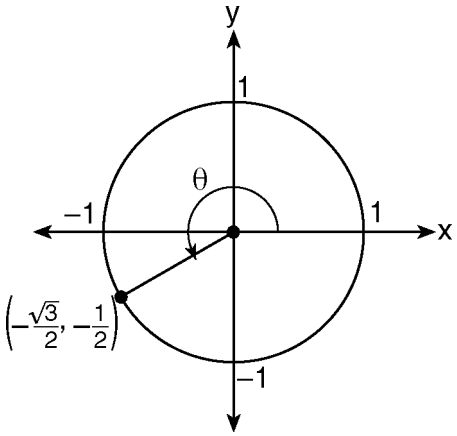
C. $\sqrt{3}-1$ D. $\sqrt{3}+1$

6. A buoy, bobbing up and down in the water as waves pass it, moves from its highest point to its lowest point and back to its highest point every 8 seconds. The distance between its highest and lowest points is 6 feet. Which equation best models the bobbing buoy?

A. $y = 12cos(\frac{\pi}{4}x)$ B. $y = 12cos(8x)$

C. $y = 3cos(8x)$ D. $y = 3cos(\frac{\pi}{4}x)$

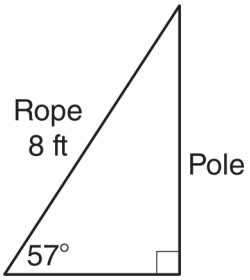
7. In the accompanying diagram of a unit circle, the ordered pair $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$ represents the point where the terminal side of θ intersects the unit circle.



What is m$\angle\theta$?

A. 210 B. 225 C. 233 D. 240

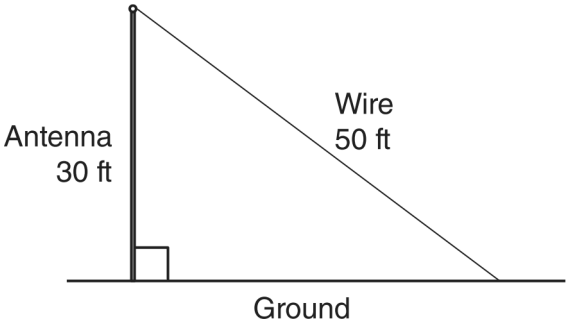
8. An 8-foot rope is tied from the top of a pole to a stake in the ground, as shown in the diagram below.



If the rope forms a 57° angle with the ground, what is the height of the pole, to the *nearest tenth of a foot*?

A. 4.4 B. 6.7 C. 9.5 D. 12.3

9. A communications company is building a 30-foot antenna to carry cell phone transmissions. As shown in the diagram below, a 50-foot wire from the top of the antenna to the ground is used to stabilize the antenna.



Find, to the *nearest degree*, the measure of the angle that the wire makes with the ground.

10. What is a positive coterminal angle to -670° ?

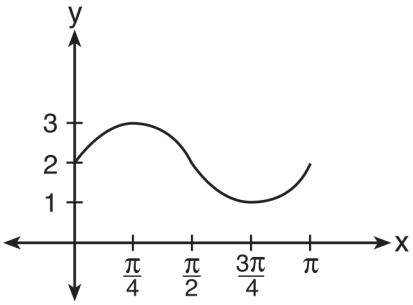
A. -50° B. 570° C. 670° D. 50°

11. Which of the following could be a reference angle of -780°?

A. 210° B. -330°

C. 60° D. 30°

12. The accompanying graph represents a portion of a sound wave.



Which equation best represents this graph?

A. $y = 2\sin\frac{1}{2}x$ B. $y = \sin\frac{1}{2}x + 2$

C. $y = \sin 2x$ D. $y = \sin 2x + 2$

13. Determine the range of the function $y = 2\cos(x) + 2$

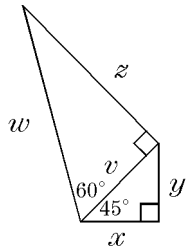
A. $-2 \le y \le 2$ B. $1 \le y \le 2$

C. $-\pi \le y \le \pi$ D. $0 \le y \le 4$

14. Given the figure, if $x = 4$, what is the value of w?

A. 4 B. $4\sqrt{3}$

C. $8\sqrt{2}$ D. $8\sqrt{6}$



15. Two towers are 32.2 m apart. From the top of the shorter one, the angle of elevation to the top of the other is 26.9°, while the angle of depression to the base is 78.7°. Find the *sum* of the tower heights to the nearest tenth of a meter.

A. 16.3 m B. 161.1 m

C. 177.4 m D. 338.6 m

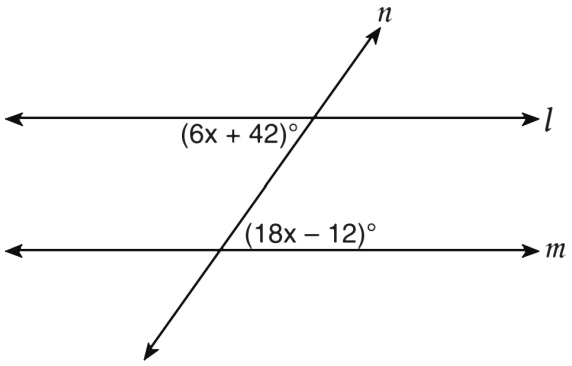
16. The number of degrees equal to $\frac{4}{9}\pi$ radians is

A. 60 B. 80 C. 130 D. 270

17. What is 235°, expressed in radian measure?

A. 235π B. $\frac{\pi}{235}$ C. $\frac{36\pi}{47}$ D. $\frac{47\pi}{36}$

18. Line n intersects lines l and m, forming the angles shown in the diagram below.



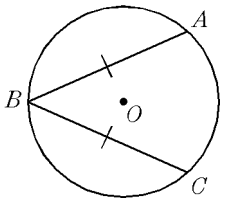
Which value of x would prove $l \parallel m$?

A. 2.5 B. 4.5 C. 6.25 D. 8.75

19. In the diagram, the inscribed angle $\angle ABC$ has a measure of 40°, $\overline{AB} \cong \overline{BC}$, and the radius of the circle shown is 15 units. What is the length of $\overset{\frown}{AB}$?

A. $\frac{45\pi}{8}$ B. $\frac{70\pi}{6}$

C. $\frac{60\pi}{7}$ D. $\frac{64\pi}{9}$



20. An artist takes a round manhole cover that is 36 inches in diameter and divides into 8 equal sized sections. Approximately what is the area of each section?

A. $108\,\text{in}^2$ B. $127\,\text{in}^2$

C. $139\,\text{in}^2$ D. $152\,\text{in}^2$

21. What is the solution set of the equation $\frac{x}{x-4} - \frac{1}{x+3} = \frac{28}{x^2-x-12}$?

A. { } B. $\{4, -6\}$

C. $\{-6\}$ D. $\{4\}$

22. Factor completely: $3x^2 - 27$

A. $3(x-3)^2$ B. $3(x^2-27)$

C. $3(x+3)(x-3)$ D. $(3x+3)(x-9)$

23. Consider solving $x^2 + {}^-5x - 20 = 0$ by completing the square.

$x^2 + {}^-5x + \_\_\_\_ = 20 + \_\_\_\_$

What is the number that goes in the blanks?

A. $-\frac{25}{2}$ B. $-\frac{25}{4}$ C. $\frac{5}{2}$ D. $\frac{25}{4}$

24. Solve: $5x^2 = 4x - 3$

A. $\frac{2 \pm i}{5}$ B. $\frac{2 \pm 2i\sqrt{11}}{5}$

C. $4 \pm \frac{2}{5}i\sqrt{11}$ D. $2 + 2i\sqrt{11}$

25. Simplify: $\frac{x^2-5x+6}{x^2-4} \div \frac{6+x-x^2}{x^2+4x+4}$

A. 1 B. -1

C. $\frac{(x-2)^2}{(x-3)^2}$ D. $-\frac{(x-3)^2}{(x-2)^2}$

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1.
Answer: A

2.
Answer: A

3.
Answer: C

4.
Answer: D

5.
Answer: C

6.
Answer: A

7.
Answer: A

8.
Answer: B

9.
Answer: 37

10.
Answer: D

11.
Answer: C

12.
Answer: D

13.
Answer: D

14.
Answer: C

15.
Answer: D
Objective: G.SRT.8

16.
Answer: B

17.
Answer: D

18.
Answer: B

19.
Answer: B
Objective: G.C.5

20.
Answer: B
Objective: G.C.5

21.
Answer: C

22.
Answer: C

23.
Answer: D
Objective: A.4c

24.
Answer: B
Objective: AII.4b

25.
Answer: B
Objective: A.APR.7