

1. Convert 160° to radians.
 - A $\frac{9\pi}{16}$
 - B $\frac{9\pi}{8}$
 - C $\frac{8\pi}{9}$
 - D $\frac{5\pi}{6}$

2. If θ is a standard position angle measuring 8 rad, in which quadrant does the terminal arm of θ lie?
 - A Quadrant I
 - B Quadrant II
 - C Quadrant III
 - D Quadrant IV

3. Which best approximates the value of $\cot(200^\circ) + \csc(3)$?
 - A 0.3273
 - B 1.7374
 - C 9.8336
 - D 21.8548

4. If $\cot(\theta) < 0$ and $\sec(\theta) > 0$, in which quadrant does the terminal arm of angle θ lie?
 - A Quadrant I
 - B Quadrant II
 - C Quadrant III
 - D Quadrant IV

5. Solve: $\csc(x) + 2 = 0$, where $0 \leq x \leq \pi$

A $x = \frac{\pi}{3}$

B $x = \frac{\pi}{6}$

C $x = \frac{\pi}{3}, x = \frac{2\pi}{3}$

D $x = \frac{\pi}{6}, x = \frac{5\pi}{6}$

6. If β is an angle in standard position with $\csc(\beta) = -\frac{25}{7}$ and $\tan(\beta) > 0$, which is true for $\sec(\beta)$ and the measure of β ?

A $\sec(\beta) = -\frac{25}{24}, \beta = 196^\circ$

B $\sec(\beta) = \frac{25}{24}, \beta = 16^\circ$

C $\sec(\beta) = -\frac{25}{24}, \beta = 344^\circ$

D $\sec(\beta) = \frac{25}{24}, \beta = 164^\circ$

7. Solve: $\csc^2(\alpha) = 1$, where $\alpha \in [0, 2\pi)$

A $\alpha = \frac{\pi}{2}$

B $\alpha = \frac{\pi}{2}, \alpha = \frac{3\pi}{2}$

C $\alpha = 0$

D $\alpha = 0, \alpha = \pi$

8. A circle centered at the origin contains the point $(-12, 16)$. What is the equation of this circle?

A $x^2 + y^2 = 16$

B $x^2 + y^2 = 20$

C $x^2 + y^2 = 40$

D $x^2 + y^2 = 400$

9. What is the length of the arc intercepted by a central angle of 100° in a circle with radius 4.6 cm?

A 1.28 cm

B 4.01 cm

C 6.92 cm

D 8.03 cm

10. Which pair of angles is coterminal?

A $\frac{5\pi}{3}$ and $-\frac{5\pi}{3}$

B $-\frac{\pi}{3}$ and $\frac{2\pi}{3}$

C $\frac{5\pi}{6}$ and $-\frac{7\pi}{6}$

D $\frac{2\pi}{3}$ and $\frac{4\pi}{3}$

11. What is the exact value of $\tan(30^\circ) + \cot(30^\circ)$

A 1

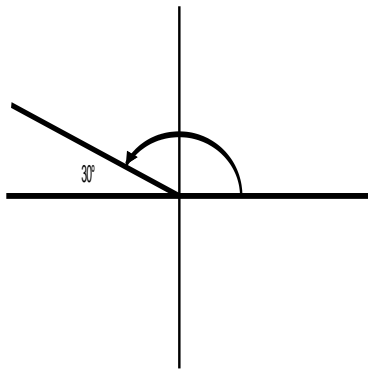
B $\frac{4\sqrt{3}}{3}$

C $\frac{2\sqrt{3}}{3}$

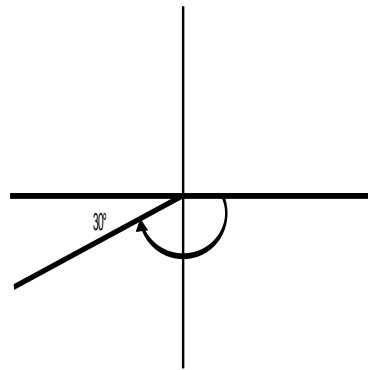
D $\sqrt{3}$

12. Which represents an angle measuring $\frac{7\pi}{6}$?

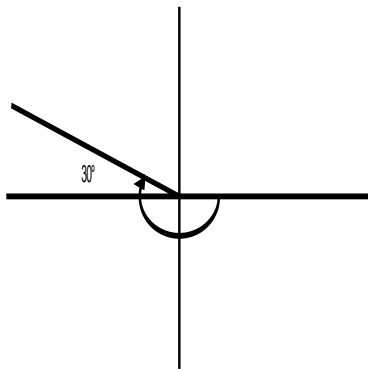
A



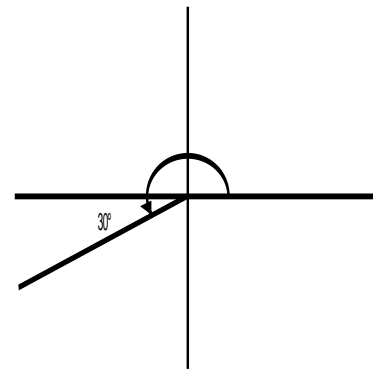
B



C



D



13. Which of the following points lies on the unit circle?

A $\left(\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{2}\right)$

B $\left(\frac{1}{2}, \frac{1}{2}\right)$

C $\left(\frac{3}{5}, -\frac{4}{5}\right)$

D $\left(\frac{2}{3}, \frac{1}{3}\right)$

14. The point $(-4, 8)$ lies on the terminal arm of an angle, θ , in standard position. Sketch the angle in standard position. Determine the exact value, in simplest radical form, for all six trigonometric ratios of θ . Calculate the measure of the reference angle, and determine the measure of θ .

15. Determine the exact value, in simplest form, for each of the following:

a)
$$\frac{\sin(-\frac{4\pi}{3}) + \sec(\frac{\pi}{4})}{\tan(-120^\circ)}$$

b)
$$\frac{\cos(\frac{5\pi}{6}) + \sin(240^\circ)}{\csc(\frac{\pi}{3})\sin(\frac{11\pi}{6})}$$

16. Determine the general solution to the equation below, where x is in degrees.

A) $6\tan^2(x) - \tan(x) - 15 = 0$

B) $2\sin^2 x + 5\sin x + 3 = 0$

Determine the general solution to the equation below, where x is in radians

C) $\sec^2 x - 2\sec x - 3 = 0$

D) $(\tan x - 1)(\tan x - \sqrt{3}) = 0$

- | | |
|--|--------------------------------|
| 17. A) Solve for x , where $-\pi \leq x < 2\pi$ | $\sec^2(x) = 3\sec(x) - 2$ |
| B) Solve for θ , where $\theta \in [-180^\circ, 180^\circ)$ | $\sec^2 \theta - 4 = 0$ |
| C) Solve for θ , where $\theta \in [0, 2\pi]$ | $\cot^2 \theta = 4\cot \theta$ |
| D) Solve for x , where $x \in [-360^\circ, 180^\circ]$ | $3\csc x - 5 = 4\csc x - 7$ |

18. On a circle (centre O) with radius 6 cm, two points are described as follows:

Point A is determined by rotating the point $(6,0)$ through an angle of 3 radians.

Point B is determined by rotating the point $(0, -6)$ through an angle of -210° .

What is the length of the longer arc joining A and B?

