

Unit 9 Review: Trigonometric Equations

- Find the length of the arc that subtends a sector angle 225° in a circle with radius 3.7 cm.
- What is the area of the sector of a circle that is bounded by the radii of 4 cm and an arc of length 8 cm?
- The point P(-4, -5) is on the terminal arm of angle θ . Calculate $\sin\theta$, $\cos\theta$ and $\tan\theta$ to 3 decimal places.
- A unit circle centred at (0, 0) has $x = 0.345$ as the x coordinate of its terminal arm in quadrant IV. If this terminal arm is extended to a circle centred at (0, 0) with radius 5, what are the coordinates that define the terminal arm?
- Solve for θ (in radians) to 2 decimal places if $0 \leq \theta < 2\pi$.
 - $\cos \theta = 0.9233$
 - $\tan \theta = -1.7283$
 - $\tan \theta = -2/7$
 - $\sec \theta = -2.45$
- Solve for $\theta =$ all real numbers
 - $\sin \theta = -0.291$
 - $\cos \theta = \frac{\sqrt{3}}{2}$
- State the exact value of each ratio where possible.
 - $\tan \frac{\pi}{2}$
 - $\cos \frac{\pi}{4}$
 - $\csc \frac{7\pi}{3}$
 - $\sec \frac{7\pi}{4}$
- Evaluate
 - $\sin^2 \frac{5\pi}{4}$
 - $\tan^3 \frac{7\pi}{3}$
 - $\cot^2 \frac{\pi}{3}$
 - $\sec^3 \frac{2\pi}{3}$
- Find each value of θ if $0 \leq \theta < 2\pi$
 - $\sec\theta = 2$
 - $\sin^2\theta = 1/4$
 - $\csc^2\theta = 2$
- Solve each equation for $0 \leq \theta < 2\pi$
 - $\sin 2x = 1$
 - $2\cos 2x = -1$
 - $\cot 3x = 0$

Answers:

- 14.5 cm 2. 16 cm^2 3. 3rd quadrant $\theta = 4.04$, $\sin \theta = \frac{-5}{\sqrt{41}}$, $\cos \theta = \frac{-4}{\sqrt{41}}$, $\tan \theta = 5/4$ 4. (1.73, -4.69)
5. a) 0.39, 5.89 b) 2.10, 5.24 c) 2.86, 6.00 d) 1.99, 4.29 6. (a) $3.44 + n2\pi$, $5.99 + n2\pi$, $n \in \mathbb{I}$ b) $\pi/6 + n2\pi$, $11\pi/6 + n2\pi$, $n \in \mathbb{I}$
7. a) undefined b) $\frac{1}{\sqrt{2}}$ c) $\frac{2}{\sqrt{3}}$ d) $\sqrt{2}$ 8. a) $1/2$ b) $3\sqrt{3}$ c) $1/3$ d) -8
9. a) 1.05, 5.24 b) $\pi/6$, $5\pi/6$, $7\pi/6$, $11\pi/6$ c) $\pi/4$, $3\pi/4$, $5\pi/4$, $7\pi/4$
10. a) $\pi/4$, $5\pi/4$ b) $\pi/3$, $2\pi/3$, $4\pi/3$, $5\pi/3$ c) $\pi/6$, $\pi/2$, $5\pi/6$, $7\pi/6$, $5\pi/3$, $11\pi/6$