

Name: _____

Student #: _____

Date: _____

T.A. #: _____

Mathematics 12 Pre-Calculus
LEARNING GUIDE 7 TEST – ANGLES AND TRIG EQUATIONS

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***Full marks will NOT be given for the final answer only.**

When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. Sketch the angle $\frac{2\pi}{3}$ radians in standard position. After you have sketched the angle, convert the angle to degrees. (2 marks)

2. Sketch the angle 250° in standard position. After you have sketched the angle, convert the angle to radians. Express your answer as an exact value in terms of π . (2 marks)

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3. Given the angle $\frac{4\pi}{7}$, determine all of the coterminal angles on the domain $-2\pi \leq \theta \leq 2\pi$. (1 mark)
4. A child on a swing, swings through an arc length of 4.4m. If the measure of the central angle is 98° , what is the length of the swing? (2 marks)
5. The point $A\left(\frac{-4}{5}, \frac{3}{5}\right)$ lies at the intersection of the unit circle and the terminal arm of an angle θ in standard position.
- Draw a diagram to show θ in standard position and the point A on its terminal arm. (1mark)
 - Determine the values of the six trig ratios for θ . Answers should be in lowest terms. (3 marks)

6. Determine the exact value for: (1 mark each)

a) $\sin \frac{\pi}{6}$

b) $\tan \frac{5\pi}{6}$

c) $\csc \frac{5\pi}{3}$

d) $\sin 135^\circ$

e) $\cot -240^\circ$

7. The angle θ is in the 2nd quadrant, and $\sin \theta = \frac{3}{5}$.
- Draw a diagram to show θ in standard position and a point P on its terminal arm. (1mark)
 - Determine possible coordinates for P. (1 mark)

8. Solve the equation $\cos \theta = \frac{1}{2}$, $0^\circ \leq \theta < 360^\circ$. (2 marks)

9. Solve each equation for θ algebraically, giving your answers as exact values where possible. (2 marks each)

a) $3 \sin \theta + \sqrt{3} = \sin \theta, 0 \leq \theta < 2\pi$

b) $2 \tan^2 \theta + \tan \theta - 1 = 0, -\pi \leq \theta \leq \pi$

10. Solve algebraically for θ in radians. Write your general solution as exact values.
(3 marks)

$$\sec \theta + \sqrt{2} = 0$$