| Name: | Student #: |
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|       |            |
| Date: | T.A. #:    |

## Mathematics 12 Pre-Calculus LEARNING GUIDE 7 TEST – ANGLES AND TRIG EQUATIONS /27

\*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. Draw the angle  $\frac{5\pi}{3}$  radians in standard position. After you have drawn the angle, convert the angle to degrees. (2 marks)

2. Draw the angle  $170^{\circ}$  in standard position. After you have drawn the angle, convert the angle to radians. Express your answer as an exact value in terms of  $\pi$ . (2 marks)

3. Given the angle -52° , determine all of the coterminal angles on the domain  $-720^{\circ} \le \theta \le 180^{\circ}.$  (1 mark)

4. The pendulum of a grandfather clock has a length of 115cm. If it swings through an angle of  $43^{\circ}$ , what is the arc length of the pendulum? (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  $\theta$  in standard position.
  - a) Draw a diagram to show  $\theta$  in standard position and the point A on it's terminal arm. (1mark)
  - b) Determine the values of the six trig ratios for  $\theta$ . Answers should be in lowest terms. (3 marks)

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

a) 
$$\sin \frac{7\pi}{6}$$

b) 
$$\tan \frac{2\pi}{3}$$

c) 
$$\sec \frac{7\pi}{4}$$

d) 
$$\sin 210^{\circ}$$

- 7. The angle  $\theta$  is in the 3<sup>rd</sup> quadrant, and  $\cos \theta = \frac{-2}{\sqrt{7}}$ .
  - a) Draw a diagram to show  $\theta$  in standard position and a point P on its terminal arm. (1mark)
  - b) Determine possible coordinates for P. (1 mark)

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

9. Solve each equation for  $\theta$  algebraically, giving your answers as exact values where possible.

(2 marks each).

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

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

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

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