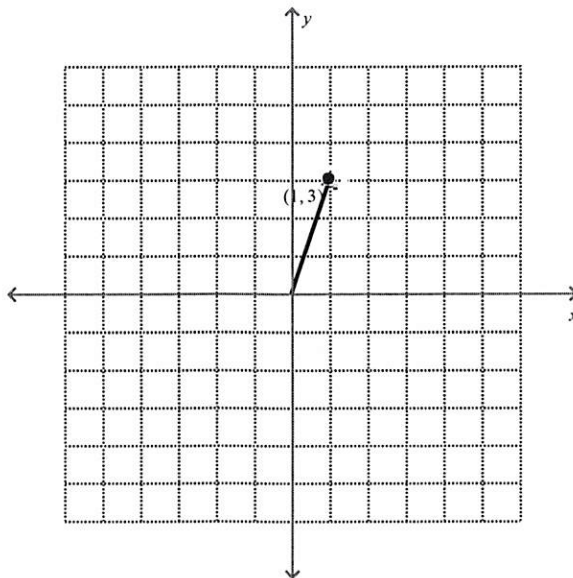


**Chapter 4 TEST**  
**Part I – Calculator allowed**
**Multiple Choice**

[3]

- A 1. The exact radian measure for an angle of  $255^\circ$  is
- A.  $\frac{17}{12}\pi$                       C.  $\frac{17}{6}\pi$
- B.  $\frac{12}{17}\pi$                               D.  $\frac{6}{17}\pi$
- C 2. Determine the measure of the angle in standard position shown on the graph below. Round your answer to the nearest tenth of a degree.



- A.  $161.6^\circ$                                C.  $71.6^\circ$
- B.  $18.4^\circ$                                 D.  $1.3^\circ$

**Problem**

3. Darren cuts a slice from his circular birthday cake, which has a diameter of 30 cm. The slice is in the shape of a sector with arc length 8 cm. What is the measure of the central angle of the slice, in degrees, rounded to one decimal place? [2]

$$a = r\theta$$

$$\theta = \frac{8}{15} \text{ (rad)}$$

$$\frac{\frac{8}{15}}{\pi} \Bigg| \frac{180^\circ}{\pi}$$

$$\theta = \frac{8}{15} \times \frac{180}{\pi} \approx \boxed{30.6^\circ}$$

4. Solve the following equation on the specific interval:

[3]

$$\csc^2\theta - 3\csc\theta = 0, \quad 0 \leq \theta \leq 360^\circ$$

restrictions:  $\sin\theta \neq 0$ 

$$\theta \neq \{0, 180, 360\}$$

resolution:  $\csc\theta(\csc\theta - 3) = 0$ 
 $\csc\theta = 0$   
impossible

$$\csc\theta = 3$$
  
 $\sin\theta = \frac{1}{3}$

$$\begin{array}{|c|} \hline X \\ \hline \end{array} \quad \theta_R = \sin^{-1}\left(\frac{1}{3}\right)$$

$$\approx 19.5^\circ$$

Solutions:  $\{19.5^\circ; 160.5^\circ\}$ 

5. Consider
- $\angle A$
- such that
- $\cos A = \frac{12}{13}$
- .

[5]

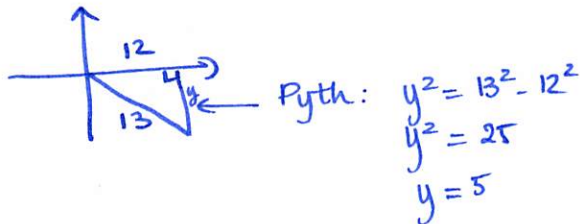
- a) In which quadrant(s) can this angle be?

I or IV

- b) If the sine of this angle is negative, in which quadrant is the angle?

IV

- c) Sketch a diagram to represent the angle in standard position, given that the condition in part b) is true.



- d) Find the coordinates of a point on the terminal arm of the angle.

P(12; -5)

- e) Write exact expressions for the other two primary trigonometric ratios for the angle.

$$\sin A = -\frac{5}{13}$$

$$\tan A = -\frac{5}{12}$$

**Chapter 4 TEST**  
**Part II – NO Calculator allowed**

**Multiple Choice**

[4]

Identify the choice that best completes the statement or answers the question.

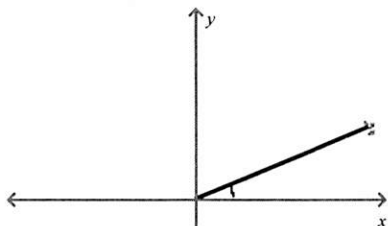
A 6.  $\frac{4}{3}\pi$  radians is equal to how many degrees?

- A. 240°  
B. 150°

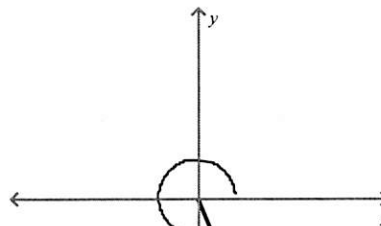
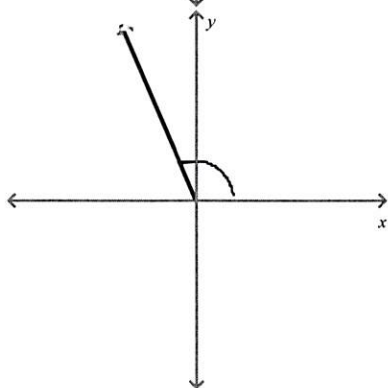
- C. 420°  
D. 330°

B 7. Which graph represents an angle in standard position with a measure of  $\frac{5}{8}\pi$  rad?

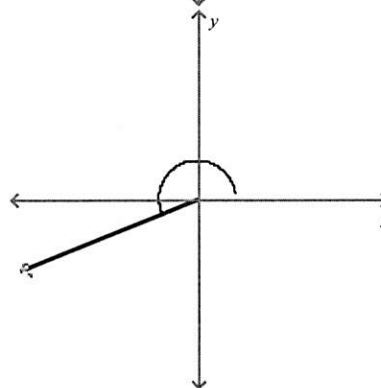
A.



C.

 B.

D.



C 8. Identify the point on the unit circle corresponding to an angle of  $\frac{4\pi}{3}$  radians in standard position.

- A.  $(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$

- C.  $(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$

- B.  $(\sqrt{3}, -\frac{\sqrt{3}}{2})$

- D.  $(-\frac{1}{2}, \sqrt{3})$



12. Solve the following equations on the specific intervals:

a)  $4\cos^2\theta = 3$ ,  $0 \leq \theta < 2\pi$

[3]

$$\cos^2\theta = \frac{3}{4}$$

$$\cos\theta = \pm \frac{\sqrt{3}}{2}$$




$$\theta_R = \frac{\pi}{6}$$

$$\text{sol: } \left\{ \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$$

b)  $2\sin\theta + \sqrt{3} = 0$ , general solution.

[3]

$$\sin\theta = -\frac{\sqrt{3}}{2}$$



$$\theta_R = \frac{\pi}{3}$$

$$\text{sol: } \left\{ \frac{4\pi}{3} + 2\pi n, \frac{5\pi}{3} + 2\pi n, n \in \mathbb{Z} \right\}$$

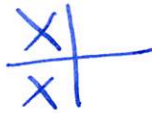
c)  $2\cos^2\theta - 5\cos\theta + 2 = 0$ ,  $-\pi \leq \theta \leq 2\pi$

[3]

$$(2\cos\theta - 1)(\cos\theta - 2) = 0$$

$$\cos\theta = \frac{1}{2}$$

$$\cos\theta = 2$$
  
impossible



$$\theta_R = \frac{\pi}{3}$$

$$\text{solutions: } \left\{ -\frac{\pi}{3}, \frac{\pi}{3}, \frac{5\pi}{3} \right\}$$