C_09 Trig Angles Practice Key

Sunday, February 4, 2018 4:26 PM

C_09 Trig Angles Practice

Trigonometry Angles Practice

Name: Key

1. Change the degree measures to radians. Give answers as both exact and approximate measures correct to one decimal place.

a) 150°

exact: $150° \times \frac{\pi}{180°} = \frac{150\pi}{180} = \frac{15\pi}{18} = \boxed{\frac{5\pi}{6}}$

approximate: $150° \times \frac{\pi}{180°} \doteq \boxed{2.6}$

b) 310°

exact: $310° \times \frac{\pi}{180} = \boxed{\frac{31\pi}{18}}$

approximate: $310° \times \frac{\pi}{180°} \doteq \boxed{5.4}$

2. Change the radian measures to degrees. Round to two decimal places if necessary.

a) $\frac{4\pi}{5}$

$\frac{4\pi}{5} \times \frac{180°}{\pi} = \boxed{144°}$

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

$\frac{5\pi}{6} \times \frac{180°}{\pi} = \boxed{150°}$

c) 6

$\frac{6}{1} \times \frac{180°}{\pi} \doteq \boxed{343.77°}$

d) –2.5

$\frac{-2.5}{1} \times \frac{180°}{\pi} \doteq \boxed{-143.24°}$

3. Determine the two next positive angles that are coterminal with the given angle.

a) 450°

$450° + 360° = \boxed{810°}$

$810° + 360° = \boxed{1170°}$

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

$\frac{\pi}{5} + \frac{2\pi}{1} \cdot \frac{5}{5} = \frac{\pi}{5} + \frac{10\pi}{5} = \boxed{\frac{11\pi}{5}}$

$\frac{11\pi}{5} + 2\pi = \frac{11\pi}{5} + \frac{10\pi}{5} = \boxed{\frac{21\pi}{5}}$

4. Find the first ***negative*** angle that is coterminal with each given angle.

a) 40°

$40° + -360° = \boxed{-320°}$

b) $\frac{9\pi}{4}$

$\frac{9\pi}{4} + -\frac{2\pi}{1} \cdot \frac{4}{4} = \frac{9\pi}{4} + \frac{-8\pi}{4} \longrightarrow = \frac{\pi}{4}$

not negative yet, so add on another negative rotation:

$\frac{\pi}{4} + -2\pi = \frac{\pi}{4} + \frac{-8\pi}{4} = \boxed{\frac{-7\pi}{4}}$

negative rotation:

$$\frac{\pi}{4} + -2\pi = \frac{\pi}{4} + \frac{-8\pi}{4} = \boxed{\frac{-7\pi}{4}}$$

5. Write an expression that gives ***all*** angles coterminal to each given angle.

a) $75°$

$75° + 360°n,\ n \in I$

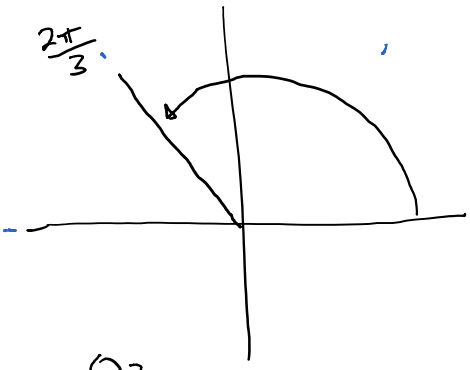
b) $\frac{\pi}{3}$

$\frac{\pi}{3} + 2\pi n,\ n \in I$

6. Draw each angle in standard position. Name the quadrant in which the angle lies.

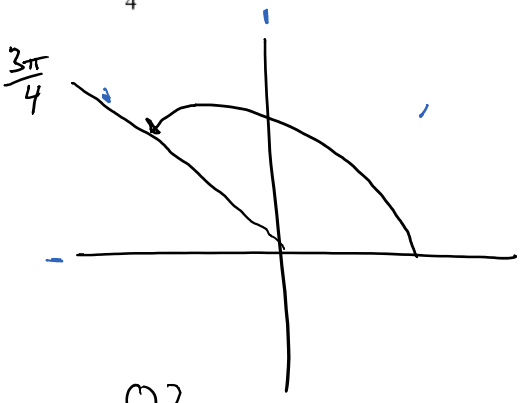
straight angle = π

a) $\frac{2\pi}{3}$



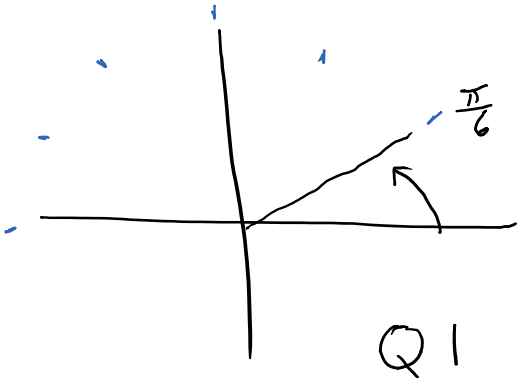
Q2

b) $\frac{3\pi}{4}$



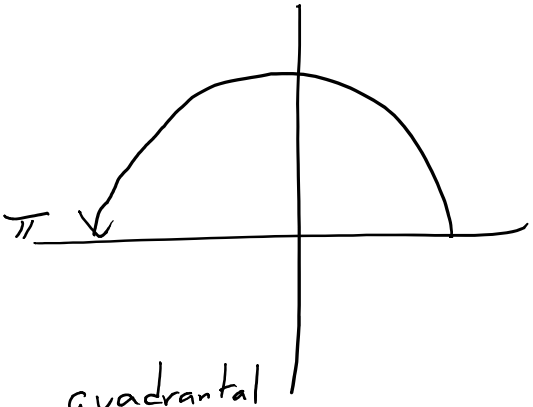
Q2

c) $\frac{\pi}{6}$



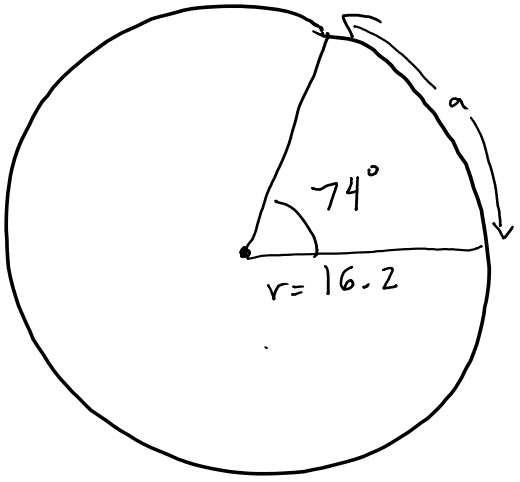
Q1

d) π



quadrantal

7. A circle with a radius of 16.2 cm is drawn on a large piece of cardboard. A central angle of 74° is drawn. What is the length of the arc subtended by this angle, rounded to the nearest tenth of a cm?

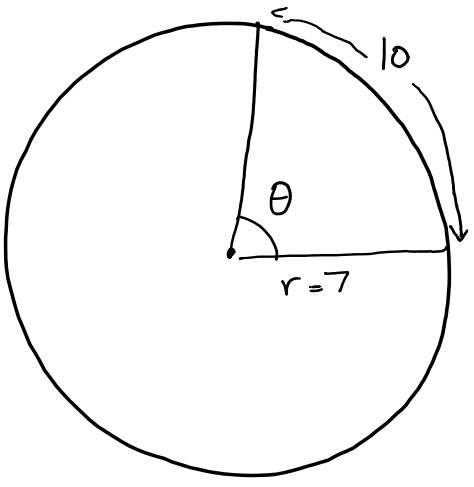


$a = r\theta$, θ in radians

$a = (16.2)\left(\frac{74^\circ}{1} \times \frac{\pi}{180^\circ}\right)$

$a \doteq 20.9$ cm

8. The radius of a circle is 7 cm, and the length of an arc on the circle is 10 cm. In radians, what is the central angle that subtends this arc length? Give your answer correct to 2 decimal places.



$a = r\theta$, θ in radians

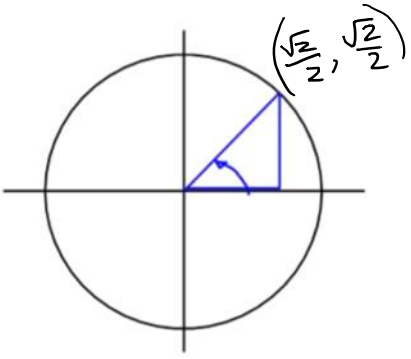
$\frac{10}{7} = \frac{7\theta}{7}$

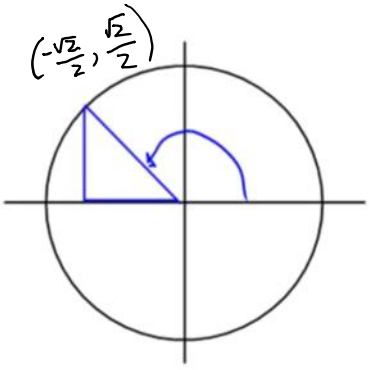
$\theta \doteq 1.43$ radians

9. For each picture below, find:

- the measure of the standard-position angle in degrees
- the measure of the standard-position angle in radians
- the coordinates of the point where the terminal arm of the angle intersects the unit circle

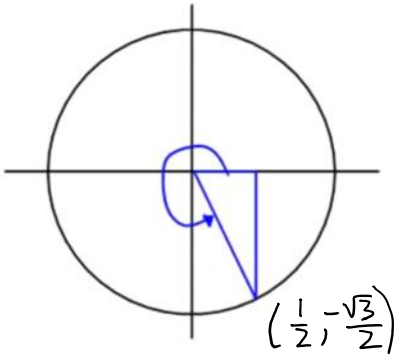
$\theta = \begin{cases} 45^\circ \\ \frac{\pi}{4} \end{cases}$

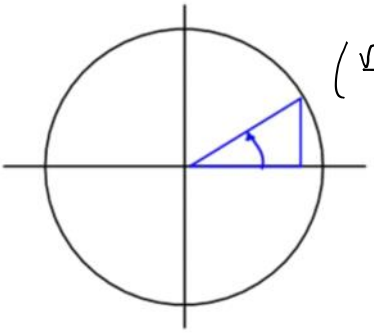




$\theta = \begin{cases} 135^\circ \\ \frac{3\pi}{4} \end{cases}$

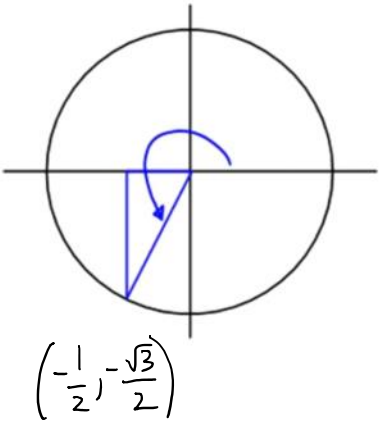
$\theta = \begin{cases} 300^\circ \\ \frac{5\pi}{3} \end{cases}$

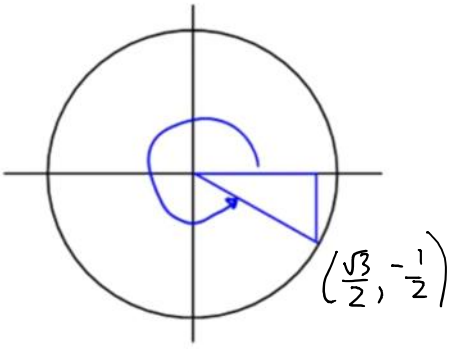




$\theta = \begin{cases} 30^\circ \\ \frac{\pi}{6} \end{cases}$

$\theta = \begin{cases} 240^\circ \\ \frac{4\pi}{3} \end{cases}$





$\theta = \begin{cases} 330^\circ \\ \frac{11\pi}{6} \end{cases}$