

**QUIZ 1: RADIANS, ARC LENGTH, AND THE UNIT CIRCLE**

1. Convert  $410^\circ$  to radians exactly:  $410 \times \frac{\pi}{180}$

$\frac{41\pi}{18}$

2. Convert 1.8 radians to degrees to 1 decimal place:

$103.1^\circ$

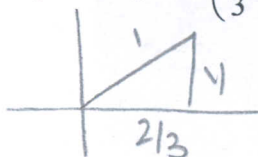
$1.8 \times \frac{180}{\pi}$

3. Find the length, to the nearest metre, of a sector of a circle of radius 6 cm and angle  $230^\circ$ .

$a = r\theta$   
 $= (0.06)(230) \left(\frac{\pi}{180}\right)$

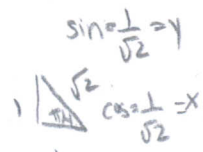
$0.24\text{m}$

4. Find  $y$  if the point  $\left(\frac{2}{3}, y\right)$  is on the unit circle:



$y = \sqrt{1 - (2/3)^2}$   
 $y = \sqrt{1 - 4/9} = \sqrt{5/9} = \sqrt{5}/3$

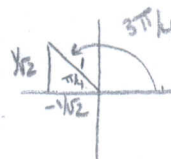
$y = \frac{\sqrt{5}}{3}$



5. If  $P(\theta)$  is the point at the intersection of the terminal arm of angle  $\theta$  and the unit circle, determine the exact coordinates of each of the following:

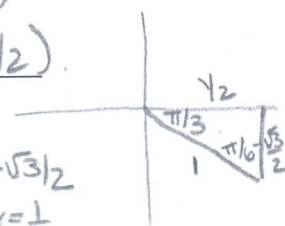
(a)  $P(\pi)$   $(-1, 0)$

(b)  $P\left(\frac{3\pi}{4}\right)$   $\left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$



(c)  $P\left(\frac{5\pi}{6}\right)$   $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

(d)  $P\left(-\frac{\pi}{3}\right)$   $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$



$\sin = \frac{1}{2} = y$   
 $\cos = -\frac{\sqrt{3}}{2} = x$

$\sin = y = \frac{\sqrt{3}}{2}$   
 $\cos = x = \frac{1}{2}$

6. For each angle, determine all the angles that are coterminal within each domain.

(a)  $65^\circ, 0^\circ \leq \theta < 720^\circ$

(b)  $\frac{3\pi}{4}, -2\pi \leq \theta < 2\pi$

$65 + 360 = 425^\circ$   
 $65 + 2(360) = 785^\circ$

$\frac{3\pi}{4} + 2\pi = \frac{11\pi}{4}$  Not in Domain

$\frac{3\pi}{4} - 2\pi = -\frac{5\pi}{4}$

Not in Domain

