MATH 6 – QUIZ 5
9 MARCH 2012

Name: SOLUTIONS

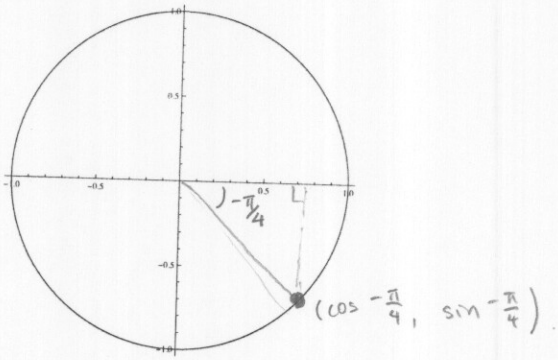
NO CALCULATORS

1. A water wheel with diameter 10 feet makes five rotations per minute. What is the *angular velocity* of the water wheel in radians per minute?

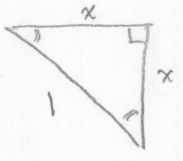
Each rotation is 2π radians, so in each minute the water wheel turns $5 \cdot 2\pi = 10\pi$ radians.

Angular velocity = 10π radians/minute

2. Indicate on the unit circle below the point corresponding to $(\cos(\frac{-\pi}{4}), \sin(\frac{-\pi}{4}))$. Compute $\cos(\frac{-\pi}{4})$.



We can use the Pythagorean theorem to compute $\cos\frac{-\pi}{4}$.



$x^2 + x^2 = 1^2$

$2x^2 = 1$

$x^2 = \frac{1}{2}$, so $x = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$.

So $\cos\frac{-\pi}{4} = \frac{\sqrt{2}}{2}$