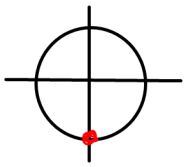
Math 1110, Sec. 08

Name: SOLUTION

Quiz 3

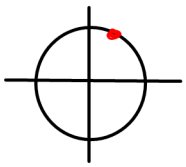
1. **[4 points]** Find the following values.

(a) $\sin\left(\frac{3\pi}{2}\right)$



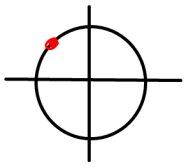
$\boxed{-1}$

(b) $\cot\left(\frac{\pi}{3}\right)$



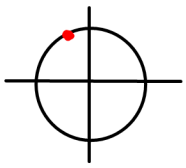
$\frac{\cos(\pi/3)}{\sin(\pi/3)} = \frac{1/2}{\sqrt{3}/2} = \boxed{\frac{1}{\sqrt{3}}}$ ← or $\frac{\sqrt{3}}{3}$

(c) $\cos\left(\frac{3\pi}{4}\right)$



$\boxed{-\frac{\sqrt{2}}{2}}$

(d) $\sec\left(\frac{2\pi}{3}\right)$



$\frac{1}{\cos(2\pi/3)} = \frac{1}{-1/2} = \boxed{-2}$

2. **[6 points]** Evaluate the following limits.

(a) $\lim_{x\to\infty} \frac{(x+3)(x-3)}{4x^2+1}$

$= \lim_{x\to\infty} \frac{x^2-9}{4x^2+1}$

$= \lim_{x\to\infty} \frac{1-\frac{9}{x^2}}{4+\frac{1}{x^2}} = \boxed{\frac{1}{4}}$

(b) $\lim_{x\to 2^+} \frac{x^2-5}{x-2}$

$\lim_{x\to 2^+} \frac{x^2-5}{x-2}$ → approaches -1

→ very small positive number

$= \boxed{-\infty}$