MATH 1850 Sec 011 and 012
CALCULUS I
QUIZ 1
August 31, 2010

Name (Last, First)_____

1. Find the domain of $y = \dfrac{x+3}{4-\sqrt{x^2-9}}$.

   For the domain $x^2 - 9 \geq 0$, which implies $x \in (-\infty, -3] \cup [3, \infty)$. However the denominator cannot be zero, therefore

   $4 - \sqrt{x^2-9} \neq 0$

   $4 \neq \sqrt{x^2-9}$

   $16 \neq x^2 - 9$

   $x^2 \neq 25$

   $x \neq 5$ or -5.

   Therefore the final domain after excluding these two points is $(-\infty, -5) \cup (-5, -3] \cup [3, 5) \cup (5, \infty)$.

2. Solve for the angle θ, where $0 \leq \theta \leq 2\pi$.

   $$\sin 2\theta - \cos\theta = 0$$

   $\sin 2\theta - \cos\theta = 0$

   $2\sin\theta\cos\theta - \cos\theta = 0$

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

   $cos\theta = 0$ or $\sin\theta = \frac{1}{2}$

   If $\cos\theta = 0$ then $\theta = \pi/2, 3\pi/2$. If $\sin\theta = \frac{1}{2}$ then $\theta = \pi/6, 5\pi/6$.

   Therefore $\theta = \pi/2, 3\pi/2, \pi/6, 5\pi/6$.