MATH 220: CALCULUS I
WORKSHEET 2
JANUARY 17, 2013

1. Convert from degrees to radians and simplify.
   (a) -60°
   (b) 720°
   (c) 3°

2. Convert from radians to degrees and simplify.
   (a) $\pi/6$
   (b) $\pi/12$
   (c) $-3\pi/4$

3. Evaluate the following quantities.
   (a) $\sin(-\pi/2)$
   (b) $\cos(2\pi/3)$
   (c) $\tan(-\pi/6)$
   (d) $\sin(5\pi/2)$
   (e) $\tan(16\pi)$
   (f) $\cot(\pi/3)$
   (g) $\sin^2(7\pi/6) + \cos^2(7\pi/6)$

4. Determine real numbers a and b so that the expression $7\sin^2\theta + 3\cos^2\theta$ can be rewritten as $a\sin^2\theta + b$.

5. Determine real numbers a and b so that the expression $3\tan^2\theta + 4\sec^2\theta$ can be rewritten as $a\tan^2\theta + b$.

6. Simplify the expression $\cot^2\theta - \csc^2\theta$.

7. For all θ, the quantity $\sin(\pi + \theta)$ is equivalent to which one of the following?

   (a) 0

   (b) 1

   (c) $\sin\theta$

   (d) $-\sin\theta$

   (e) $\cos\theta$

   (f) $-\cos\theta$

8. For all θ, the quantity $\cos(\pi/2 + \theta)$ is equivalent to which one of the following?

   (a) 0

   (b) 1

   (c) $\sin\theta$

   (d) $-\sin\theta$

   (e) $\cos\theta$

   (f) $-\cos\theta$

9. Carefully sketch a graph of each of the following functions.

   (a) $f(x) = \dfrac{1}{x-2}$

   (b) $f(x) = 2\sin(x + \pi)$

   (c) $f(x) = \ln(x - 1)$

   (d) $f(x) = x^2 + 6x + 4$