Additional Problem Assignment 4

1. For each angle find the reference angle (express in degrees, and notice that angle will be between 0° and 180°).
   (a) -130°
   (b) 220°
   (c) 530°

2. For each angle find the reference angle in the first quadrant (express in radians, and notice that angle will be between 0 and $\frac{\pi}{2}$).
   (a) $\dfrac{4\pi}{7}$
   (b) $\dfrac{9\pi}{4}$
   (c) $-\dfrac{3\pi}{5}$
   (d) $-\dfrac{13\pi}{6}$

3. Express each of the following in terms of reference angles (i.e. $\sin(230^\circ) = -\sin(50^\circ)$).
   (a) $\sin(420^\circ)$
   (b) $\cos\left(\dfrac{11\pi}{15}\right)$
   (c) $\tan(-110^\circ)$

4. Given that $\sin\left(\dfrac{5\pi}{12}\right) = \dfrac{\sqrt{6}+\sqrt{2}}{4}$ and $\cos\left(\dfrac{5\pi}{12}\right) = \dfrac{\sqrt{6}-\sqrt{2}}{4}$. Find the exact value (i.e. don't use your calculators) of
   (a) $\sin\left(\dfrac{\pi}{12}\right)$ (Hint: $\frac{\pi}{12}$ and $\frac{5\pi}{12}$ are complementary angles. So this should be easy.)
   (b) $\cos\left(\dfrac{\pi}{12}\right)$
   (c) $\sin\left(\dfrac{7\pi}{12}\right)$
   (d) $\cos\left(\dfrac{13\pi}{12}\right)$
   (e) $\sin\left(-\dfrac{5\pi}{12}\right)$
   (f) $\cos\left(-\dfrac{23\pi}{12}\right)$