Math 06, Homework 11 on the unit circle, graphing
due Tue, Nov 26 at the start of class.

Write all your answers on a separate sheet. It is very important that you show clearly any work you had to do to get the answer. These first eight questions are 1 point each. Make sure your answers match the solutions on page 2.

(1) Give the exact coordinates of the point $P(x, y)$ on the unit circle corresponding to $-225°$.

(2) Give the exact coordinates of the point $P(x, y)$ on the unit circle corresponding to $2\pi/3$.

(3) For the point $P(-\sqrt{3}/2, -1/2)$ on the unit circle, give the sine, cosine and the tangent of the angle θ that corresponds to P.

(4) Determine $\sin\theta$, $\cos\theta$ and $\tan\theta$ for $\theta = \pi/2$.

(5) Find $\tan\dfrac{11\pi}{12}$, rounded to the nearest ten-thousandth.

(6) Find all values of θ, where $0 \le \theta \le 2\pi$, that make $\sin\theta = -1/2$.

(7) Find all values of θ, where $0 \le \theta \le 2\pi$, that make $\sin\theta = 0$.

(8) Complete this table of values for $y = 4\sin x$

x	$y = 4\sin x$
0	
$\pi/2$	
π	
$3\pi/2$	
2π	

These next five questions are 5 points each. Show clearly all your working out and reasoning.

(11) Give the exact coordinates of the point $P(x, y)$ on the unit circle corresponding to $150°$.

(12) Give the exact coordinates of the point $Q(x, y)$ on the unit circle corresponding to $3\pi/2$.

(13) For the point $R(0, -1)$ on the unit circle, give the sine, cosine and the tangent of the angle θ that corresponds to R.

(14) Find all values of θ, where $0 \leq \theta \leq 2\pi$, that make $\cos\theta = 0$.

(15) Complete this table of values for $y = -\cos x$

x	$y = -\cos x$
0	
$\pi/2$	
π	
$3\pi/2$	
2π	

Answers to questions (1)-(8):

(1) $P(-\sqrt{2}/2, \sqrt{2}/2)$

(2) $Q(-1/2, \sqrt{3}/2)$

(3) $\cos\theta = x = -\sqrt{3}/2, \quad \sin\theta = y = -1/2, \quad \tan\theta = y/x = \sqrt{3}/3$

(4) $\sin\pi/2 = 1, \quad \cos\pi/2 = 0, \quad \tan\pi/2$ is undefined

(5) $\tan 11\pi/12 = -0.2679$ rounded to nearest ten-thousandth (4 places)

(6) $\theta = 7\pi/6$ or $11\pi/6$

(7) $\sin\theta = 0$ for $\theta = 0,\ \pi$ and 2π

x	$y = 4\sin x$
0	0
$\pi/2$	4
π	0
$3\pi/2$	-4
2π	0

(8)