MATH-105
Trigonometry

Exam #3

Name: _____

The majority of the credit you receive will be based on the completeness and the clarity of your responses. Show your work, and avoid saying things that are untrue, ambiguous, or nonsensical.
This Test has 6 questions, for a total of 60 points.

(10 points) 1. Find all exact solutions (algebraically) to the following:

$$2\sin(2\theta - \frac{\pi}{2}) = 1, 0 \leq \theta < 2\pi$$

(10 points) 2. Find all exact solutions (algebraically) to the following:

$$\sec^2(t) - \sqrt{3}\tan(t) = 1, 0 \leq t < 2\pi$$

(10 points) 3. Convert the following point and line from Cartesian to Polar form (r in terms of θ).

a) $(10, -24)$
b) $y = 6x + 11$

(10 points) 4. Convert the following point and line from Polar to Cartesian (y in terms of x).

a) $r = \frac{3}{2}\cos\theta$
b) $(-4, \frac{7\pi}{6})$

(10 points) 5. Given $\cos\omega - \cos t = -2\sin(\frac{\omega+t}{2})\sin(\frac{\omega-t}{2})$. Find the exact answer for $\cos(\frac{19\pi}{12}) - \cos(\frac{13\pi}{12})$(SHOW WORK).

(10 points) 6. Given $u =< 2, 3 >, v = 4i - 5j$. Compute the following:

a) $3v - 6u$
b) $|3v - 6u|$
c) Find the normalized vector for $(3v - 6u)$
d) Find the direction angle of the vector $(3v - 6u)$