Directions: This is due on Tuesday, May 27 at the beginning of class. As this is a quiz, I will not help you with any of the problems. However, you may ask any question that you would ask during a normal quiz. Any time you are asked to “find” a vector, I mean for you to find a unit vector decomposition for that vector.

1. (3pt) Find all values of $\theta$ such that $\cos(\theta) = 0.72$ and $0 \leq \theta \leq 3\pi$. Round to two decimal places. 
   Hint 1: $3\pi \approx 9.42$. Hint 2: You should find three values of $\theta$ in this problem.

2. (4pt) Find all values of $x$ such that $3 \sin(2x - 1) + 1 = 2$. Round to two decimal places as appropriate.

3. (3pt) Vectors $\vec{u}$ and $\vec{v}$ are drawn below. Draw the vectors $\vec{u} + \vec{v}$, $\vec{v} - \vec{u}$, and $-2\vec{v}$. Be sure to label every vector you draw (including any copy of $\vec{u}$ or $\vec{v}$ that you draw). Note: The grid lines are drawn to help with translation and to help you judge distances. I don’t expect absolute precision but do your best.
4. Let $\vec{u} = 12\hat{i} - 5\hat{j}$ and let $\vec{w} = -3\hat{i} - 2\hat{j}$.

(a) (1pt) Find $3\vec{u}$.

(b) (1pt) Find $||\vec{u}||$

(c) (2pt) Find $\vec{u} + \vec{w}$

(d) (2pt) Find $\vec{u} - 2\vec{w}$

5. (2pt) The vector $\vec{v}$ is drawn below. If $||\vec{v}|| = 9$, find $\vec{v}$.

6. (1pt) True or False: If $\vec{v}$ is a vector then $5 + 4\vec{v} = 9\vec{v}$.

7. (1pt) True or False: There are an infinite number of solutions to $\cos(\theta) = \frac{5}{4}$ and the solutions are

$$\theta = \cos^{-1}\left(\frac{5}{4}\right) + 2\pi n \quad \text{and} \quad \theta = -\cos^{-1}\left(\frac{5}{4}\right) + 2\pi n \quad \text{for integers, } n.$$