QUIZ 3 - MATH 251   Friday, February 2
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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. A conic section in the standard (cartesian) position has eccentricity 0.75 and vertex at $(4, 0)$. Find the following:

   (a) The location of its foci.

   (b) Its equation in cartesian coordinates.

   (c) Sketch its graph.

2. Consider the conic section given by the equation

$$9x^2 + 4y^2 - 90x + 24y + 225 = 0.$$

(a) Identify the conic.

(b) Find its vertices and its foci

3. Let $\mathbf{v} = \overrightarrow{PQ}$, where $P = (-1, 5)$ and $Q = (3, 2)$.

(a) Write $\mathbf{v}$ in terms of its components.

(b) Find $\|\mathbf{v}\|$.

(c) Compute $\mathbf{v} - 3\langle 1, 2 \rangle$.