

King Fahd University of Petroleum and Minerals
Faculty of Science – Per-Year Math Program
Math 002 - Term 032
Recitation hour (7.3 & 8.1)

Question1

Given the vectors $\mathbf{u} = \langle 10, -8 \rangle$ and $\mathbf{v} = \langle 12, -6 \rangle$.

- a. Find the magnitude and the direction angle of the vector $\frac{1}{2}\mathbf{u} - \frac{1}{6}\mathbf{v}$.
- b. Find a unit vector in the opposite direction of the vector $\frac{1}{2}\mathbf{u} - \frac{1}{6}\mathbf{v}$.

Question2

Given the vector $\mathbf{u} = -2\mathbf{i} + \mathbf{j}$, $\mathbf{v} = 3\mathbf{i} + \mathbf{j}$.

- a. Find $\mathbf{u} \cdot \mathbf{v}$
- b. Find the angle between the vectors \mathbf{u} and \mathbf{v}
- c. Find $\text{Proj}_{\mathbf{v}} \mathbf{u}$

Question3

Find the vertex, focus, and directrix of the parabola given by the equation

$$6x - 3y^2 - 12y + 4 = 0.$$

Question4

Find the equation in standard form of the parabola that has vertex $(3, -5)$, has its axis of symmetry parallel to the x -axis, and passes through the point $(4, 3)$.