# Math 32A - Quiz 1, Tuesday

October 14, 2025

## 1 Preamble

This is the first quiz of the class, you may not use any outside materials besides your "cheat sheet" on a standard notecard. Irrational numbers do not need to be expanded (e.g. $2\pi$ is preferred as an answer to 6.28... and $\cos(27°)$ is preferred to .891...). You have 20 minutes to answer all questions, show your work.

## 2 Problems

1. If $\mathbf{v}, \mathbf{w}$ are two vectors which satisfy

$$||\mathbf{v}|| = \sqrt{6}, ||\mathbf{w}|| = \sqrt{2}$$

and such that the angle between $\mathbf{v}, \mathbf{w}$ is 150 degrees ($5\pi/6$ radians), calculate the values

   (i) $\mathbf{v} \cdot \mathbf{w}$

   (ii) $||\mathbf{v} + 2\mathbf{w}||$

   (iii) $||2\mathbf{v} + 3\mathbf{w}||$

2. Find an equation of the plane containing the three points

$$P = (2, -3, -1),$$
$$Q = (4, 7, 1),$$
$$R = (1, 1, 1).$$

Additional paper for work: