

MA 166: Quiz 3

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You have **15 minutes** to complete this quiz. You may work in groups, but you are not allowed to use any other resources.

Problem 1. Let $\mathbf{u} = \langle 6, 3, 1 \rangle$, $\mathbf{v} = \langle 0, 1, 2 \rangle$, and $\mathbf{w} = \langle 4, -2, 5 \rangle$.

- (i) Find the projection $\text{proj}_{\mathbf{u}} \mathbf{v}$.
- (ii) Find the cross product $\mathbf{v} \times \mathbf{w}$.
- (iii) What is a vector orthogonal to \mathbf{v} and \mathbf{w} ?
- (iv) Find the scalar triple product $\mathbf{u} \cdot (\mathbf{v} \times \mathbf{w})$.
- (v) Are the vectors \mathbf{u} , \mathbf{v} , and \mathbf{w} coplanar?

Problem 2. Find the area enclosed by the regions

- (i) $y = x^3$, and $y = |x|$.
- (ii) $y = e^x$, $y = e^2x$, and $x = \ln 2$.