

Math 3160 - Quiz 2

Name: _____

To receive credit you must show your work.

1. For the following points, answer the questions below.

$$A(1, 0, 3), B(1, 0, -1), \text{ and } C(0, 2, 4)$$

- (a) Find the following vectors $\mathbf{v}$ the vector from A to B, and $\mathbf{w}$ the vector from B to C.
- (b) What is $\|\mathbf{v}\|$?
- (c) Find a unit vector parallel to $\mathbf{w}$.
- (d) Find the norm of $2\mathbf{v} - 3\mathbf{w}$.

2. For the following points and vectors, answer the questions below.

$$A(1, 0, 3), B(1, 0, -1), \text{ and } C(0, 2, 4)$$

$$\mathbf{v} = (1, 1, -2), \text{ and } \mathbf{w} = (0, 1, 0)$$

- (a) Find the equation of the line containing A and B.
- (b) Find the equation of the line containing A in the direction of $\mathbf{w}$.
- (c) Find the equation of the line containing A in the direction of $\mathbf{w}$.
- (d) Compute $\mathbf{v} \cdot \mathbf{w}$.
- (e) Find the projection of $\mathbf{v}$ onto $\mathbf{w}$.
- (f) Find the projection of $\mathbf{w}$ onto $\mathbf{v}$.
- (g) Find the plane containing A which is normal to $\mathbf{v}$ (point normal).
- (h) Find the plane containing the points A, B and C.