Quiz 9

1. Evaluate the three expressions below where $v = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}$, $w = \begin{bmatrix} 3 \\ -1 \\ -3 \end{bmatrix}$, $z = \begin{bmatrix} -4 \\ -3 \\ 1 \end{bmatrix}$. (2 pts. each)

$$v \cdot (w + z) \qquad (3v) \cdot w \qquad ||z - w||$$

2. Are the vectors v and w in the above problem orthogonal? Justify your answer. (2 pts.)

3. Compute $\text{proj}_w(z)$ for the vectors w and z in the above problem. Use the formula below. (2 pts.)

$$\text{proj}_w(z) = \frac{w \cdot z}{w \cdot w} w$$