

Quiz Four

For the first problem you do not need to show any work. For the second problem, show all of your work, and justify your answers. Answers without work or justification will not receive full credit. You may not use notes or calculators on any part of the quiz.

1 (4 points) For this problem, simply state whether the expression yields a vector, a scalar, or if it makes no sense. In this problem, \mathbf{a} , \mathbf{b} , \mathbf{c} , and \mathbf{d} are all vectors. If in doubt, you may assume that none of the quantities involved are zero. ($\frac{1}{2}$ point each.)

(a) $\mathbf{a} \cdot \mathbf{b} - \mathbf{c} \times \mathbf{d}$

(b) $\|\mathbf{a}\| - \mathbf{b} \cdot \mathbf{c}$

(c) $(\text{comp}_{\mathbf{b}}\mathbf{a})(\mathbf{c} \cdot \mathbf{d})$

(d) $(\text{proj}_{\mathbf{b}}\mathbf{a})(\mathbf{c} \cdot \mathbf{d})$

(e) $\mathbf{a} \times \mathbf{b} \times \mathbf{c}$

(f) $(\mathbf{a} \cdot \mathbf{b})\mathbf{c} \times \mathbf{d}$

(g) $\frac{\mathbf{a} \cdot \mathbf{b}}{\mathbf{c} \times \mathbf{d}}$

(h) $\frac{\mathbf{a} \times \mathbf{b}}{\mathbf{c} \cdot \mathbf{d}}$

2 (6 points) Find the area of the triangle enclosed by the points $(1,2,-3)$, $(-1,1,-2)$, and $(0,3,-1)$.