

Quiz #3; Tuesday, date: 02/06/2018
MATH 53 Multivariable Calculus with Stankova
Section #114; time: 2 – 3:30 pm
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Student name:

1. Find the scalar and vector projections of \mathbf{b} onto \mathbf{a} .

$$\mathbf{a} = \langle -6, 3, -2 \rangle, \quad \mathbf{b} = \langle 4, -1, 4 \rangle.$$

2. *True / False?* For any vector \mathbf{a} and \mathbf{b} , we have

$$(\mathbf{a} + \mathbf{b}) \times (\mathbf{a} - \mathbf{b}) = \mathbf{a} \times \mathbf{a} - \mathbf{b} \times \mathbf{b} = \mathbf{0} - \mathbf{0} = \mathbf{0}.$$

3. *True / False?* In the three dimensional space, two lines must be in one of three cases:

- (a) they are parallel
- (b) they intersect
- (c) they do not lie on the same plane.