Quiz 2

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September 11, 2017

1. Moving point $\mathbf{p}$ in the direction of vector $\vec{e}$ will preserve the area of the triangle.

2. We're effectively changing the b when we're moving in a direction orthogonal to $\vec{e}$. Thus the area changes accordingly.

$$\frac{dA}{db} = \frac{h}{2}$$

3. The magnitude of this vector is $\frac{h}{2}$ The direction is the cross product of $\vec{e}$ and $\vec{n}$. Thus the gradient vector that points in the direction of quickest area decrease is:

$$\vec{g} = (\vec{e} \times \vec{n}) \frac{h}{2}$$

4. No; the direction of the vector represents the most the area of this triangle in this plane can change. If $\mathbf{p}$ moved out of this plane, then only the component of the change in $\mathbf{p}$ in the direction of $\vec{g}$ would affect the area. Thus for the same amount of change in the position of $\mathbf{p}$, the area of the triangle would change *less* for an out-of-plane movement.