

Math 32A, Lecture 1: Quiz 2, Tuesday Sections

1. Find the volume of the parallelepiped spanned by $\mathbf{v} = \langle 1, 3, 1 \rangle$, $\mathbf{w} = \langle -4, 2, 6 \rangle$ and $\mathbf{u} = \langle 1, 0, 4 \rangle$.
2. Find the slope of the tangent line to $\mathbf{r}(t) = \langle e^t, t^2 \rangle$ at $t = 1$.

$$V = \mathbf{u} \cdot (\mathbf{v} \times \mathbf{w})$$

$$\mathbf{v} \times \mathbf{w} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 3 & 1 \\ -4 & 2 & 6 \end{vmatrix} = [3(6) - 2(12)]\hat{i} - [(16) - (-4)]\hat{j} + [1(2) - (-12)]\hat{k}$$

$$= 16\hat{i} - 10\hat{j} + 14\hat{k}$$

$$\langle 1, 0, 4 \rangle \cdot \langle 16, -10, 14 \rangle = 16 + 0 + 56 = 72$$

units
(unit for volume is not specified)

$$2) \frac{dy}{dx} = \frac{dy}{dt} \cdot \frac{dt}{dx} = \frac{2t}{e^t}$$

$$\frac{2(1)}{e^{(1)}} = \frac{2}{e}$$

at $t=1$,