

Oyeleye Ibrahim-Niass Olawaseyi

Elect / Elect Engineering 19/ENGG04/052 MAT102

~~032~~ 032

$$1 \quad r = ti + t^2j + t^3k$$

$$\frac{dr}{dt} = i + 2tj + 3t^2k$$

$$\text{at } t=1 \quad \frac{dr}{dt} = i + 2j + 3k$$

$$\left| \frac{dr}{dt} \right| = \sqrt{(1)^2 + (2)^2 + (3)^2} = \sqrt{14}$$

$$T = \frac{dr/dt}{|dr/dt|} = \frac{i + 2j + 3k}{\sqrt{14}}$$

$$2 \quad A = 4t^3j + 5k \quad B = 2t^2i + 4tj$$

$$C_1 = A \times B$$

$$C_1 = \begin{vmatrix} i & j & k \\ 0 & 4t^3 & 5 \\ 2t^2 & 4t & 0 \end{vmatrix}$$

$$C_1 = (0 - 20t)k - (0 - 10t^2)j + (0 - 8t^3)i$$

$$C_1 = -20tk + 10t^2j - 8t^3i$$

$$\int_1^0 = \frac{-20t^2}{2} + \frac{10t^3}{3} - \frac{8t^6}{6} + C$$

$$= -10t^2 + \frac{10t^3}{3} - \frac{4t^6}{3} + C$$