HABUNDA ODUNAYO JOSHUA 19/ENG08/1022 MAT102 Assignment BIOMEDICAL

1) $r = xi + yj + zk$

$r = ti + t^2 j + t^3 k$

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

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

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

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

2) $A = 4t^3 j + 5k$

$B = 2t^2 i + 4tj$

$C = A \times B = (4t^3 j + 5k) \times (2t^2 i + 4tj)$

$C = 16t^4$

$= \int_0^1 16t^4 dt$

$\left[\frac{16t^5}{5} + c\right]_0^1$

$= \frac{16}{5}$ //