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Matric No. - 19/ENG04/043

Math 2

(i) Velocity $r = (8t^2)i + (4t^3 - 7t)j + (t + 3)k$

(ii) Velocity $= \frac{dr}{dt}$
 $= 24t^2i + (12t^2 - 7)j + k$

(iii) Acceleration $= \frac{dv}{dt}$

Acceleration $= 48ti + 24tj$

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

$\frac{dr}{dt} = 3i + 3t^2j + 2tk$

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

$|\frac{dr}{dt}| = \sqrt{3^2 + 3^2 + 2^2}$

$T = \frac{\frac{dr}{dt}}{|\frac{dr}{dt}|} = \frac{3i + 3j + 2k}{\sqrt{22}}$