Ogini Oluwaseyi. M

19/ENG06/041

Mechanical Engineering

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

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

ii) Acceleration $= \frac{d^2r}{dt^2} = (48t)i + (24t)j + k$

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

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

$= 3i + 3(1)^2 j + 2(1)k$

$= 3i + 3j + 2k$

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

$= \sqrt{9 + 9 + 4}$

$= \sqrt{22}$

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