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MAT 102 ASSIGNMENT

✓ Alongside Treasure Agbemu-owo

✓ Civil Engineering

✓ 19/ENG03/005

✓ MAT 102 Assignment

1. $x = xi + yj + zk$

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

i. velocity = $\frac{dx}{dt}$

$$= 24t^2i + (12t^2 - 7)j + k$$

ii. Acceleration = $\frac{d^2x}{dt^2}$

$$= 48ti + 24bj + k$$

2. $x = xi + yj + zk$

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

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

at $t = 1$

$$\frac{dx}{dt} = 3i + 3j + 2k$$

$$\left| \frac{dx}{dt} \right| = \sqrt{3^2 + 3^2 + 2^2}$$

$$= \sqrt{22}$$

$$T = \frac{dx/dt}{\left| dx/dt \right|} = \frac{3i + 3j + 2k}{\sqrt{22}}$$