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Assignment

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

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

ii) Acceleration = $\frac{d^2r}{dt^2} = 48ti + 24tj$

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

when $t = 1$

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

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

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

$$= \sqrt{22}$$

$$= 4.69$$

$$T = \frac{dr/dt}{|dr/dt|}$$

$$= \frac{3i + 3j + 2k}{4.69}$$

$$= \frac{3i}{4.69} + \frac{3j}{4.69} + \frac{2k}{4.69}$$