

FRATI ENTROME  
MAT 102

19/ENG02/015

1)  $x = 8t^3, y = 4t^3 - 7t, z = t + 3$   
 $r = 8t^3 i + (4t^3 - 7t) j + (t + 3) k$   
Velocity  $\frac{dr}{dt} = 24t^2 i + (12t^2 - 7) j + k$

Acc =  $\frac{d^2r}{dt^2} = 48t i + 24 j //$

2)  $x = 3t, y = t^3, z = t^2$  at  $t = 1$

$r = axi + ayj + azk$

$T = \frac{dr}{dt}$   
 $\left| \frac{dr}{dt} \right|$

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

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

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

$\left| \frac{dr}{dt} \right| = \sqrt{3^2 + 3^2 + 2^2}$   
 $= \sqrt{22}$

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