$$\vec{r} = 5t^2\hat{i} - 7t\hat{j} + 6t^3\hat{k}$$

Use the position vector r to answer the following questions. Position r is measured in meters, time t is in units of seconds.

1. What is the velocity in the x-direction (in meters/second)?

    A. 5t^2
    B. 10t
    C. 10
    D. none of the above

2. What is the velocity in the z-direction at t = 3 seconds (in meters/second)?

    A. 6
    B. 18
    C. 36
    D. 162
    E. none of the above

3. What is the magnitude of the velocity at t = 2 seconds (in meters/second)?

    A. 75
    B. 85
    C. 99
    D. 5184
    E. none of the above