Show all work and circle/box your final answer. All answers must be simplified unless stated otherwise.

1. $s = 6t - t^2$, $0 \le t \le 6$ gives the position of a body moving on a coordinate line, with $s$ in meters and $t$ in seconds.

   (a) Find the body's displacement and average velocity for the given time interval.

   (b) Find the body's speed and acceleration at the endpoints of the interval.

   (c) When, if ever, during the interval does the body change direction?

   (d) Find the total distance traveled by the body during the interval.

2. Use linear approximation to approximate $\sqrt[3]{29}$. Is this an over or underestimate?

3. One car leaves a given point and travels north at 30 mph. Another car leaves the same point at the same time and travels west at 40 mph. At what rate is the distance between the two cars changing at the instant when the cars have traveled 2 hours?