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The position of a particle is given by the equation $s=f\left(x\right)=t^{3}-6t^{2}+9t$ where t is measured in seconds and s in meters.

a. Find the velocity at time t.

b. What is the velocity after 2 sec.? After 4 sec.?

c. When is the particle at rest?

d. When is the particle moving forward?

e. Draw a diagram to represent the motion of the particle.

f. Find the total distance traveled by the particle during the first five seconds.