Notes 25 **Name _____**

Net Change as Integral of a Rate (5.5)

Position, Velocity, Acceleration: Find the position, velocity, and acceleration at the given times for the given position functions. Find when the particle is stopped. Find the distance traveled and displacement between each time, *t*.

1. $x(t) = t^3 - 3t^2 - 24t + 10, \;\; t = 0, 5$

2. $x(t) = 6t + 3\cos(t) + 5, \;\; t = 0, \; \pi$

3. $x(t) = -2t^3 - 3t^2 + 36t + 10, \ t = 0, \ 2$

4. Given $v(t) = 3t^2 - 12t - 15$. When is the particle at rest? What is the velocity when the acceleration is zero? What is the position when the particle is at rest if x(0) = 12?