Thursday Reading Assessment: Unit 2, Kinematics

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1 Memory Bank

1. Assume that acceleration is constant: $a = 3.0$ (m/s^2), and that $\Delta x = x_f - x_i$
2. $v_f(t) = gt + v_i$ (m/s)
3. $x(t) = \frac{1}{2}at^2 + v_i t + x_i$ (m)
4. $v_f^2 = v_i^2 + 2a\Delta x$ (m/s)^2.

2 Chapter 2 - Kinematics

1. Solve Equation 2 for t, and just take the magnitude of the vectors. $t =$?

2. Insert t into Equation 3, and solve for v_f^2. What relationship do you find?

3. **Example from KNS**: Imagine a sprinter preparing for a race. He is starting *from rest*, and the race begins at $t = 0$. He accelerates *up to 10 m/s* at a *rate* of 3 m/s^2. **How far** has he traveled? Use the fact that we have proved Equation 4.

4. If he travels at 10 m/s for another 20 seconds, what additional distance does he cover?