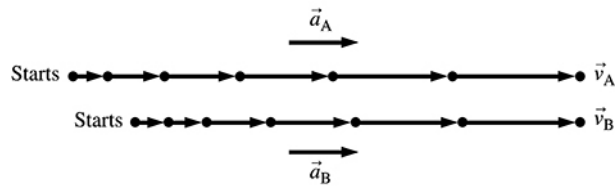


1.52. Solve:

(a)



(b) A coyote (A) sees a rabbit and begins to run toward it with an acceleration of 3.0 m/s^2 . At the same instant, the rabbit (B) begins to run away from the coyote with an acceleration of 2.0 m/s^2 . The coyote catches the rabbit after running 40 m. How far away was the rabbit when the coyote first saw it?

(c)

<p><u>Known</u></p> <p>$x_{A0} = 0 \quad v_{A0} = 0$</p> <p>$t_0 = 0 \quad a_A = 3 \text{ m/s}^2$</p> <p>$v_{B0} = 0 \quad a_B = 2 \text{ m/s}^2$</p> <p>$v_{A1} = x_{B1} = 40 \text{ m}$</p> <p><u>Find</u></p> <p>x_{B0}</p>	<p>The diagram shows a horizontal x-axis. On the left, a coyote is at position 0. On the right, a rabbit is at position x_{B0}. Above the coyote is an arrow labeled \vec{a}_A pointing right. Above the rabbit is an arrow labeled \vec{a}_B pointing right. On the far right, the coyote is at position x_{A1} and the rabbit is at position x_{B1}. The coyote and rabbit are shown to be at the same position at time t_1.</p>
	<p>0</p> <p>x_{A0}, v_{A0}, t_0 x_{B0}, v_{B0}, t_0 x_{A1}, v_{A1}, t_1 x_{B1}, v_{B1}, t_1</p>