Part A Problems

1. An accelerating car's velocity changes from 24 m/s to 30 m/s in three seconds. What will be its velocity in four more seconds?

2. An object is initially at x_o = 40 m, and three seconds later it is at -50 m. (a) What was its displacement during this time? (b) What was its average velocity?

3. The average velocity of an automobile during a one-hour time period is 30 m/s. (a) What was its displacement during this time? (b) How far did it travel?

4. An object's speed changes from 60 m/s to 40 m/s in seven seconds. Through how many meters did the object travel during that time?

5. An automobile's velocity is 20 m/s. It then begins accelerating at a rate of 3 m/s^2. (a) What will be its velocity six seconds later? (b) What was its average velocity during this time? (c) How far did it travel?

6. An automobile whose initial velocity is 10 m/s begins accelerating at 2 m/s^2. After how many seconds will it have traveled 200 m?

Solutions

1. a = 6 m/s/3s
 	
    = 2 m/s^2
 	
v = 30 + 2(4)
   = 38 m/s
	2. Δx = -50 - 40
	    = - 90 m
	$\bar{v}$ = -90/3
	    = -30 m/s
		3. (a) 30(3600) = 108,000 m
		    (b) 108,000 m

		4. x = [(60 + 40) /2] 7 = 350 m

5. (a) v = 20 +3 (6)
     = 38 m/s
 (b) $\bar{v}$ = (20 + 38)/2
     = 29 m/s
 (c) x = 29(6)
     = 174 m
	6. 200 = 10t + ½ (2) t^2
	t^2 + 10t - 200 = 0
	a = 1
	b = 10
	c = -200
	t = numerator/denominator
	
	numerator = -10 + $\sqrt{(10^2 - 4(1)(-200)}$
	           = -10 + $\sqrt{(100 + 800)}$
	           = -10 + $\sqrt{900}$
	           = -10 + 30
	           = 20
	denominator = 2(1)
	         = 2
	t = 20/2
	  = 10 s	