Sketch position versus time graphs for the following motions. Include a numerical scale on both axes with units that are reasonable for this motion. Some numerical information is given in the problems. You may have to make reasonable estimates for other quantities.

a) A student walks to the bus stop, waits for the bus, then rides to campus. Assume that all the motion is along a straight street.

b) A student walks slowly to the bus stop, realizes he forgot his paper that is due and quickly walks home to get it.

c) Quarterback Bill throws the ball to the right at a speed of 15m/s. It is intercepted 45m away by Carlos, who is running to the left at 7.5m/s. Carlos carries the ball 60m to score. Let x = 0m be the point where Bill throws the ball. Draw the graph for the football.
Page 49

Questions 7, 8, 9, 11, 15, 16, 17

Problems 3, 5

(Please show steps in the problems and the rationale when you answer questions. Simply saying “Yes” or “No” or writing down the final answer is not sufficient).

Page 50

Problems 7, 12, 14, 17, 24, 27, 29, 37

Answers to even numbered problems:

12a) \( v_f = 20.0 \text{ m/s at 10s and 5.00 m/s at 20s} \)  
12b) \( x_f = 262\text{m} \)

14a) \( a = 1.60\text{m/s}^2 \)  
14b) \( a = 1.60 \text{ m/s}^2 \) \( 5.00s < t < 15.0s \)  
\( a = 0.800 \text{ m/s}^2 \)

24a) \( \Delta x = 1875\text{m} \)
24b) \( \Delta x = 1457\text{m} \)
24c) \( a_1 = 3.3 \text{ m/s}^2 \)  
\( a_2 = 0 \text{ m/s}^2 \)  
\( a_3 = -5.0 \text{ m/s}^2 \)
24d) \( x_1 = (1.67 \text{ m/s}^2) t^2 \)  
\( x_2 = (50\text{m/s})t – 375 \text{ m} \)
\( x_3 = (250 \text{ m/s})t – (2.5 \text{ m/s}^2)t^2 – 4375 \)

Page 53

Problems 45, 47, 62, 69, 70

62) \( t_{\text{total}} = 41.0 \text{ s} \)
\( (x_f - x_i)_{\text{total}} = 1.73 \text{ km} \)
(c) \( v_{\text{final}} = -184 \text{ m/s} \)

70a) \( = 26.4 \text{ m} \)  
b) \( 6.82 \% \)