3.5: Selected Answers

[1] t2 = 1.86 s

[2] v1 = 11.2 m/s

[3] δrx = 8.3 m

[4] v1 = 3.28 m/s

[5] v1 = 31.4 m/s

[6] The ball hits people in the stands behind home plate. (It sails 10.7 m above home plate.)

[7] θ = 44°

[8] θ = 20.1°, 68.8°

[9] θ = 18.6°, 77.2°

[10] No.

[11] Yes, as long as the cannon is set to 16.4°.

[12] t2 = 0.56 s

[13] t2 = 3.22 s

[14] t2 = 3.22 s

[15] 335 m from home

[16] t2 = 40 s a = 0.15 m/s^2

[17] 52.6 m from ship

[18] 25.7 m from ship

[19] t2 = 33.5 s θ = 188° from line initially between ship and man

[20] μs $\geq$ 0.256

[21] a = 0 m/s^2

[22] a = 0.94 m/s^2

[23] m = 65.2 kg

[24] Fsf = 56 N

[25] Fsf = 186 N up

[26] a = 1.39 m/s^2 down

[27] a = 0.84 m/s^2

[28] m = 51.4 kg

[29] t2 = 7.4 s

[30] r2x = 14 m

[31] μk = 0.085

[32] F = 270 N

[33] F = 55.9 N

[34] a = 0.73 m/s^2

[35] a = 0.66 m/s^2

[36] a = 0 m/s^2

[37] Fmax = 980 N

[38] Fmax = 359 N

[39] Fmax = 947 N

[40] Fmin = 210 N

[41] a. r2 = 2.23 m b. t2 = 1.49 s

[42] a. v2 = 2.52 m/s b. r2 = 3.78 m

[43] m = 51.4 kg

[44] a. r2 = 14 m b. t2 = 1.75 s

[45] v2 = 27 m/s

[46] μ = 0.14

[47] v2 = 14.9 m/s

[48] v2 = 8.89 m/s

[49] v2 = 14.3 m/s

[50] θ = 56°

[51] v2 = 5.8 m/s

[52] v2audi = 12.8 m/s

[53] v2audi = 4.86 m/s
