01. Selected Answers For Dynamics

Selected Answers for Model 3 *Spiral Physics: Mechanics*

Kinematics

41. $r_2 = 1.4$ m
42. $t_2 = 1.45$ m
43. $t_3 = 3.4$ s
44. $t_3 = 4.55$ s
45. $r_3 = 36.6$ m
46. $r_4 = 2.0$ km
47 $t_4 = 370$ ks
49. $t_2 = 14.9$ s
50. $t_2 = 7.8$ s
51. $t_3 = 2.87$ s

Dynamics

80. $F_{rope} = 420$ N
81. $F_{cushion} = 1.91$ kN
83. $F_{bottom\ cable} = 11.4$ N
84. $F_{cushion} = 2.83$ kN
85. $F_{ground} = 43.7$ kN
86. $r_3 = 63.5$ m
87. $r_3 = 1.55$ km
89. $m_{block} = 240$ kg
90. $m_{block} = 26$ kg
91. $F_{rope} = 500$ N
92. $F_{rope} = 490$ N

Conservation Laws

122. a. $F_{scale} = 755$ N b. $F_{scale} = 780$ N
123. a. $v = 116$ m/s b. $t = 26.8$ s
124. a. $v = 12.5$ m/s b. $F_{ground} = 43.7$ kN
125. $t_2 = 0.89$ s $r_2 = 1.78$ m
127. $m_{student} = 94$ kg
128. $v_2 = 6.0$ m/s
129. $v_2 = 1.5$ m/s
130. $v_{2\ ship} = 24.3$ m/s
131. $v_{probe} = 667$ m/s
132. $v_{2\ platform} = 0.28$ m/s
133. $v_{2\ platform} = 0.06$ m/s
134. $v_{2\ balloon} = 6.3$ m/s