

Problems for chapter 11

1, 2, 4, 5, 8, 9, 13, 14, 19, 21, 26, 27, 28, 31, 33, 35, 36, 37, 41, 42, 52, 53, 55, 56, 57, 67, 70, 71, 77, 82, 84, 85

Answers to even-numbered problems:

Chapter 11

2. 530 N/m

4. 735 N/m, 2.5 cm, 2.63 Hz

6.

8. 0.59 kg

10. 0.866 A

12. 0.282 s

14. 9.43 m/s

16. 0.45 m, 1.019 Hz, 2.49 J, 1.11 J

18. 2.6

20. $\frac{1}{2\pi} \times \sqrt{2k/m}$

22. $A_A = 2.5$ m, $A_B = 3.5$ m, $f_A = 0.25$ Hz, $f_B = 0.50$ Hz, $T_A = 4.0$ s, $T_B = 2.0$ s, A involves sine, B involves cosine

24. $Y(t) = 0.280 \sin(34.3 t)$,

26. 597 m/s

28. 1.7 s, 0.60 Hz

30. 1.3 s

32. 0.572 Hz, 0.571 m/s, 59.5 mJ

34. $\sqrt{2gl(1 - \cos\theta_0)}$

36. 2.25 m/s

38. AM: 190m to 550 m, FM: 2.78 m to 3.41 m

40. 1.41

42. 77.5 m/s, 8277 N

44. 1900 km

46. 0.25, 0.50

48. 1.41

50. 0.56

52. 440, 880, 1320, 1760 Hz

54. 70, 140, 210 and 350 Hz

56. 70 Hz

58. Decrease by 4.8 %

60. 4 patterns

62. 6.3 km/s

64. 24°

66. 1.745 cm

68. 0.115 m

70. 1.23 Hz

72. 16 cm/s

74. 0.650 m, 1.177 Hz, 23.1 J, 3.7 J, 19.4 J

76. 1.46 Hz, 14.7 J

82. 0.9922 m, 1.6 mm, 0.164 m

84. 0.14 m