17-11 Standing Waves

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Question 65
The equation for a standing wave is given by:
y = 4.00*10**(-3) sin(2.09 x) cos(60.0 t) (in Sl units).
What is the distance between two consecutive antinodes?
(a) 0.560 m
(b) 1.50 m
(c) 5.00 m
(d) 3.00 m
(e) 2.20 m

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Question 66).19-27%
Two harmonic waves traveling in opposite directions interfere to produce a standing wave described by: y (x,t) = (0.3 m) sin(0.25*x) cos(120*pi*t). The speed of the two interfering waves is
(a) 1203 m/s
(b) 6527 m/s
(c) 1508 m/s
(d) 94.25 m/s
(e) 753.0 m/s

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Question 67
The maximum amplitude of a standing wave on a string, with linear density = 3.00 grams/m and tension of 15.0 N, is 0.20 cm. If the distance between adjacent nodes is 12.0 cm, what will be the wave function y(x,t) of the standing wave? (Note that x is in centimeters and t is in seconds.)
(a) y(x,t) = 0.20 sin(0.262 x) cos(2.20*10**3 t).
(b) y(x,t) = 0.20 sin(0.421 x) cos(1.85*10**3 t).
(c) y(x,t) = 0.20 sin(0.262 x) cos(1.85*10**3 t).
(d) y(x,t) = 0.40 sin(0.262 x) cos(1.11*10**3 t).
(e) y(x,t) = 0.40 sin(0.421 x) cos(1.85*10**3 t).

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Question 68
The equation for a standing wave is given by: y = 4.00*10**(-3) sin(2.09 x) cos(60.0 t) (SI units). What is the distance between two consecutive antinodes?
(a) 0.56 m.
(b) 3.00 m.
(c) 2.20 m.
(d) 1.50 m.
(e) 5.00 m.

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Question 69 0.5-43%
A traveling wave is given by:
y(x,t) = 6.0*cos[0.63*x + 25.1*t)],
where x and y are in cm and t is in seconds. It interferes with a similar wave propagating in the opposite direction to produce a standing wave. The distance between the node and the consecutive antinode is:
(a) 1.0 cm.
(b) 2.5 cm.
(c) 0.5 cm.
(d) 5.0 cm.
(e) 7.9 cm.