Chapter 4 Part 2 Review/Work Day

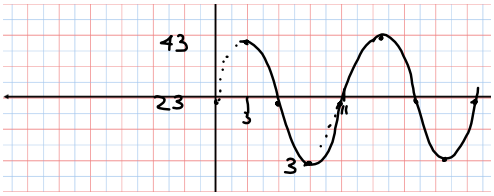
Feb 10-3:00 PM

GO COUGARS!

Homework Questions

WS #2

1a.



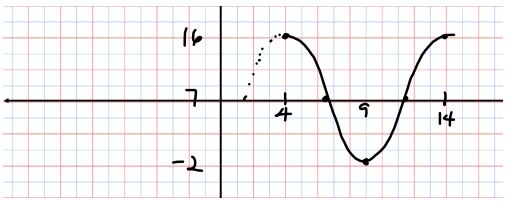
b. 3 feet

c.
$$h(t) = 20\cos(\frac{\pi}{4}(t-3)) + 23$$
$$h(t) = 20\sin(\frac{\pi}{4}(t-1)) + 23$$

d. i. 8.86 ft, ii. 33 ft
iii. 23 ft, iv. 8.86 ft

e. 5.32 ft

2a.

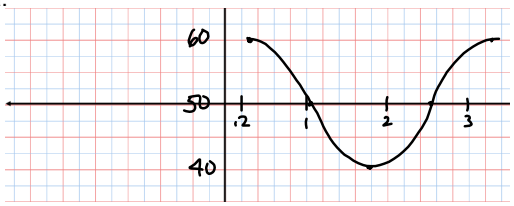


b.
$$h(t) = 9\sin(\frac{\pi}{5}(t-1.5)) + 7$$
$$h(t) = 9\cos(\frac{\pi}{5}(t-4)) + 7$$

c. i. 14.28 ft, ii. 4.22 ft

d. .082 sec out, 7.92 sec in, 10.08 sec out

3a.



b.
$$h(t) = -10\sin(\frac{2\pi}{3}(t-1.05)) + 50$$
$$h(t) = 10\cos(\frac{2\pi}{3}(t-.3)) + 50$$

c. 43.31 cm

d. 58.09 cm e. .52 sec

Feb 2-9:51 PM

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Homework Questions

WS #3

1) a) 800, 500, 200; 2.9, 5.1, 7.3

$\frac{2\pi}{4.4} = \frac{2\pi}{44} = \frac{5\pi}{11}$

b) $y = -300\cos\left(\frac{5\pi}{11}(x-2.9)\right)+500$

c) $y = -300\cos\left(\frac{5\pi}{11}(7-2.9)\right)+500$
$= 227.$

d) $300 = -300\cos\left(\frac{5\pi}{11}(x-2.9)\right)+500$
(2.311, 3.489)

2) a) 78.5, 51.6, 29.7; 1, 7, 13

$\frac{2\pi}{12} = \frac{\pi}{6}$

b) $y = -21.9\cos\left(\frac{\pi}{6}(x-1)\right)+51.6$

c)

month	Model Temp	Actual
Feb	32.6°	33.4°
May	62.6°	57.2°
Oct	51.6°	51.4°

3) a) 11 years

b) 50

c) 110, 60, 10; 1948, 1961

$\frac{2\pi}{11}$

d) $y = 50\cos\left(\frac{2\pi}{11}(x-1948)\right)+60$

e) 1998 : $y = 50\cos\left(\frac{2\pi}{11}(1998-1948)\right)+60$
$= 12.025$
$y = 50\cos\left(\frac{2\pi}{11}(2000-1948)\right)+60 = 52.884$

Feb 2-9:51 PM

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p 349 Homework Questions

In Exercises 1–16, evaluate the expression without using a calculator.

1. $\arcsin\frac{1}{2}$
3. $\arccos\frac{1}{2}$
5. $\arctan\frac{\sqrt{3}}{3}$
7. $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$
9. $\arctan(-\sqrt{3})$
11. $\arccos\left(-\frac{1}{2}\right)$
13. $\sin^{-1}\frac{\sqrt{3}}{2}$
15. $\tan^{-1}0$

In Exercises 19–34, use a calculator to evaluate the expression. Round your result to two decimal places.

27. $\arccos(-0.41)$
29. $\arctan 0.92$
31. $\arcsin\frac{1}{4}$
33. $\tan^{-1}\frac{1}{2}$

In Exercises 35 and 36, determine the missing coordinates of the points on the graph of the function.

35. $y = \arctan x$; $\left(-1, -\frac{\pi}{4}\right)$, $\left(-\sqrt{3}, -\frac{\pi}{3}\right)$

In Exercises 37–42, use an inverse trigonometric function to write θ as a function of x.

37. x, θ, 4

39. 5, $x+2$, θ

In Exercises 43–48, use the properties of inverse trigonometric functions to evaluate the expression.

43. $\sin(\arcsin 0.3)$
44. $\tan(\arctan 25)$
45. $\cos[\arccos(-0.1)]$
46. $\sin[\arcsin(-0.2)]$
47. $\arcsin(\sin 3\pi)$
48. $\arccos\left(\cos\frac{7\pi}{2}\right)$

In Exercises 49–58, find the exact value of the expression. (Hint: Sketch a right triangle.)

49. $\sin[\arctan\frac{1}{2}]$
50. $\sec[\arcsin\frac{1}{3}]$
51. $\cos(\tan^{-1}2)$
52. $\sin\left(\cos^{-1}\frac{\sqrt{3}}{5}\right)$
53. $\cos[\arcsin\frac{1}{3}]$
54. $\csc[\arctan(-\frac{1}{3})]$
55. $\sec[\arctan(-\frac{1}{2})]$
56. $\tan[\arcsin(-\frac{1}{2})]$
57. $\sin[\arccos(-\frac{1}{3})]$
58. $\cot[\arctan\frac{1}{2}]$

In Exercises 59–68, write an algebraic expression that is equivalent to the expression. (Hint: Sketch a right triangle, as demonstrated in Example 7.)

59. $\cos(\arctan x)$
60. $\sin(\arctan x)$
61. $\cos(\arcsin 2x)$
62. $\sec(\arctan 3x)$
63. $\sin(\arccos x)$
64. $\sec[\arcsin(x-1)]$
65. $\tan\left(\arccos\frac{x}{3}\right)$
66. $\cos\left(\arctan\frac{1}{x}\right)$
67. $\csc\left(\arctan\frac{x}{\sqrt{7}}\right)$
68. $\cos\left(\arcsin\frac{x-h}{r}\right)$

In Exercises 71–74, fill in the blank.

71. $\arctan\frac{9}{x} = \arcsin(\quad)$, $x \neq 0$

51. $\sqrt{5}$, 2, $\frac{1}{\sqrt{5}}$

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HOMEWORK

More 4.7 and Graphs to Equations and Harmonic Motion

Workbook pgs 68-72 Answer Keys on following pages

Aug 29-6:38 AM

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Homework Questions

Sinusoidal Worksheet #4 (answers of equations may vary)

1.

2a. 5 ft below equilibrium

b. 5 ft above equilibrium

c. $y = 5\cos\frac{7\pi}{6}$ = 4.33 above equilibrium

3. $y = 20\sin(2\pi x) + 160$

4a. 12.5

b. 53.5

c. $y = 12.5\sin(\frac{\pi}{6}(x-4)) + 53.5$

$y = -12.5\cos\left(\frac{\pi}{6}(x-1)\right) + 53.5$

d. 42.7

5a. 6.5

b. 0.5

c. 6/5 or 1.2 sec

d. 2 ft

6. $y = 2\cos\left(\frac{\pi}{5}(x-2.5)\right)$

7a. 1.72

b. 2.27

c. 12.3 hr

d.

$y = -1.72\sin\left(\frac{20\pi}{123}(x-3.11)\right) + 2.27$

$y = 1.72\cos\left(\frac{20\pi}{123}(x-.05)\right) + 2.27$

e. 3.97 ft at noon

8. $V(t) = 120\sin\frac{\pi}{30}t$

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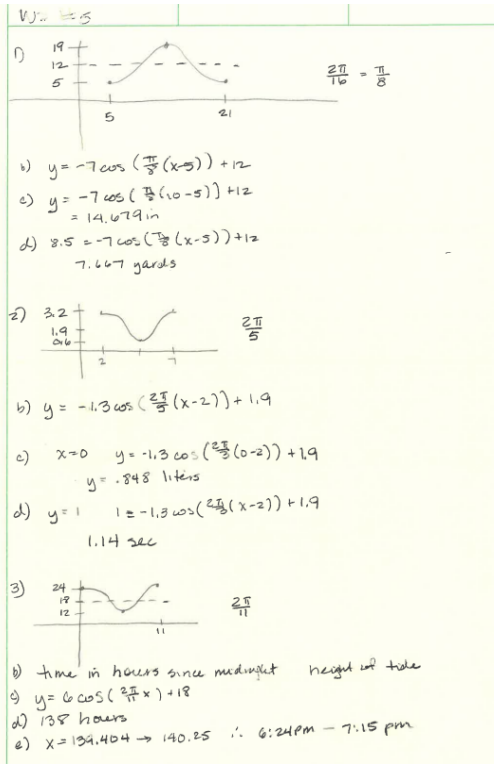
WS #5 Homework Questions



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