

C2L3 Answers

12. no

14. yes

16. $(-\infty, -8)(-2, 0)(2, 5)$

18. no

20. $x = -8, 0, 5$

local minima of $-4, 0, 0$

22. a. x-int: $(1, 0)(-1, 0)$

y-int: $(0, 2)$

b. D: $[-3, 3]$

R: $[0, 3]$

c. incr: $(-1, 0)(1, 3)$

decr: $(-3, -1)(0, 1)$

d. even

24. a. x-int: $(1, 0)$

y-int: none

b. D: $(0, \infty)$

R: $(-\infty, \infty)$

c. incr: $(0, \infty)$

d. neither

26. a. x-int: $(\pm \frac{\pi}{2}, 0)$

y-int: $(0, 1)$

b. D: $[-\pi, \pi]$

R: $[-1, 1]$

c. incr: $(-\pi, 0)$

decr: $(0, \pi)$

d. even

28. a. x-int: $(-2.3, 0)(3, 0)$

y-int: $(0, 1)$

b. D: $[-3, 3]$

R: $[-2, 2]$

c. incr: $(-3, -2)(0, 2)$

decr: $(2, 3)$

constant: $(-2, 0)$

d. neither

- 30. a. f has a local maximum of 2 at $x = 0$.
b. f has a local minimum of 0 at $x = \pm 1$.**

- 32. a. f has a local maximum of 1 at $x = 0$.
b. f has a local minimum of -1 at $x = \pm\pi$.**

34. even

36. neither

38. neither

40. even

42. odd

44. odd

- 46. a. f has an absolute maximum of 4 at $x = 4$.
b. f has an absolute minimum of 0 at $x = 5$.**

- 48. a. f has an absolute minimum of 1 at $x = 0$.
b. f has no absolute maximum.**

- 50. a. f has an absolute maximum of 4 at $x = 2$.
b. f has no absolute minimum.**

- 52. a. f has no absolute maximum.
b. f has no absolute minimum.**

- 54. f has a local maximum of 5 at $x = 0$.
 f has a local minimum of 1 at $x = 2$.
 f is increasing on the intervals of $(-\infty, 0)$ and $(2, \infty)$.
 f is decreasing on the interval of $(0, 2)$.**
- 56. f has a local maximum of 0 at $x = 0$.
 f has a local minimum of -0.25 at $x = \pm 0.71$.
 f is increasing on the intervals of $(-0.71, 0)$ & $(0.71, \infty)$.
 f is decreasing on the intervals of $(-\infty, -0.71)$ & $(0, 0.71)$.**
- 58. f has a local maximum of 3.25 at $x = 2.16$.
 f has a local minimum of -4.05 at $x = -1.16$.
 f is increasing on the interval of $(-1.16, 2.16)$.
 f is decreasing on the intervals of $(-\infty, -1.16)$ & $(2.16, \infty)$.**
- 60. f has local maximums of -0.52 at $x = -1.57$ and -1.87 at $x = 0.64$.
 f has a local minimum of -2 at $x = 0$.
 f is increasing on the intervals of $(-\infty, -1.57)$ & $(0, 0.64)$.
 f is decreasing on the intervals of $(-1.57, 0)$ & $(0.64, \infty)$.**

- 62. a. -4**
b. -13
c. -1

- 64. a. -2**
b. 0
c. 5

- 66. a. -4**
b. $y = -4x + 1$

- 68. a. 1**
b. $y = x + 3$

- 70. a. -5**
b. $y = -5x$

- 75. b. 10 lawn mowers**
c. \$238.65

- 76. a. 2.16 hours**
b. 4.47 hours

81. $2, h \neq 0$

82. $-3, h \neq 0$

83. $2x + h + 2, h \neq 0$

84. $4x + 2h + 1, h \neq 0$

85. $4x + 2h - 3, h \neq 0$

86. $-2x - h + 3, h \neq 0$