

Intro to Calc - Final Review Answers

1. $x^2 + 2x\Delta x + (\Delta x)^2 + 4$

2. 17

3. 0

4. 0

5. DNE

6. 5

7. -7

8. 3

9. DNE

10. $\frac{-1}{9}$

11. $6x + 4$

12. -8

13. a. -2 b. 2 c. DNE d. 1

14. 4

15. $(-\infty, 2) \cup (2, \infty)$

Non-removable asymptote

16. a. $(-\infty, 1) \cup (1, \infty)$

b. $(-\infty, \infty)$

17. a. nonremovable @ $x = 3$

b. nonremovable @ $x = -2, x = 1$

c. removable @ $x = -3$

nonremovable @ $x = 1$

18. $a = 5$

19. $f'(x) = 15x^4 - 8x$

20. $f'(x) = 0$

21. $f'(x) = 4$

22. $f'(x) = 6(3x - 5)$

23. $f'(x) = \frac{-10}{(x+3)^3}$

24. $f^5(x) = \frac{-480}{x^6}$

25. $f'(x) = \frac{-2}{(5x-2)^2}$

26. $f'(x) = 2(3x - 4)(x - 6)^3(9x - 26)$

27. $f'(x) = \frac{3x-4}{2\sqrt{x}}$

28. $f'(x) = \frac{32x+12}{3x^{2/3}}$

29. $f'(x) = \frac{6}{7}x^2$

30. $f'(x) = \frac{6x^2-2x-9}{2x^{3/2}}$

31. $f'(x) = \frac{3}{(x+1)^2}$

32. $f'(x) = 2(3x^2 + x - 4)$

33. $f'(x) = \frac{(x-2)}{2(x-1)^{3/2}}$

34. $f'(x) = \frac{2x-3}{2\sqrt{x^2-3x+4}}$

35. $f'(x) = \frac{7x^3+6x^2}{2\sqrt{x+1}}$

36. $f'(x) = -16x + 9$

37. $f'(x) = \frac{-2x}{(3x^2-1)^2}$

38. $f'(x) = 9x^2 - 20x + 11$

39. $f'(x) = 28x(2x^2 + 5)^6$

40. $f'(x) = \frac{2x}{3(x^2+x)^{2/3}}$

41. $f'(x) = 3(x^2 + 2x - 2)$

42. $f''(x) = 240x^2 + \frac{-12}{x^4}$

43. $\frac{dy}{dx} = \frac{2x+3y}{2y-3x}$

44. $\frac{dy}{dx} = \frac{3x^2}{2y}$

45. $\frac{dy}{dx} = \frac{1}{5}$ or $\frac{dy}{dx} = \frac{y-4}{x}$

46. $\frac{dy}{dx} = \frac{1-2xy}{x^2+2y}$

47. $\frac{dy}{dx} = \frac{10x-3y}{3x}$

48. $\frac{dy}{dx} = 1$

49. $\frac{dy}{dx} = \frac{-y+1}{1+x}$

50. $y - 1 = \frac{-4}{3}(x - 2)$

51. $y - 1 = \frac{-1}{2}(x - 1)$

52. $m = \frac{-9}{8}$

53. $m = -1$

54. a. $y + 8 = 2(x - 2)$

or $y = 2x - 12$

b. $y - \frac{1}{3} = \frac{-4}{3}(x - 2)$

or $y = \frac{-4}{3}x + 3$

55. $y - 14 = 12(x - 3)$

56. $\frac{1}{6}$

57. $\frac{-1}{4}$

58. $(1, -1)$ and $(-1, -3)$

59. -36 ft/s

60. $10 \frac{\text{ft}}{\text{s}}$

61. \$205

62. a. 5.3 ft

b. 1.67s

c. -10ft/s

d. -8 ft/s

e. -6 ft/s²

63. \$0.17

64a. $R(x) = 600x - 3x^2$

b. $R'(x) = 600 - 6x$

c. \$420

65. a. 1

b. an additional \$1 in profit is created

66. \$104.93

67a. $h(t) = -16t^2 + 310t$

b. $h'(t) = -32t + 310$

c. $h''(t) = -32$

d. $t = 19.375\text{s}$

e. -310 ft/s

f. 1456 ft

68. VA at $x = -3$

69. $f'(x) = 0$ at $x = 0, x = 2$ $f''(x) = 0$ at $x = 1$

70. $(-\infty, -1) \cup (-1, 0)$

71. relative max @ $(-2, -14)$ and $(1, 40)$

Relative min @ $(-1, -36)$ and $(2, 18)$

72. Concave up: $(-\infty, -2)$

Concave down: $(-2, \infty)$

73. $f(0) = 0$, $f(\frac{1}{2}) = \frac{-1}{16}$

74. relative max @ $(-2, -14)$ and $(1, 40)$

Relative min @ $(-1, -36)$ and $(2, 18)$

75. relative max @ $(2, 10)$

Relative min @ $(4, 6)$

76. Increasing $(-\infty, 2) \cup (4, \infty)$

Decreasing $(2, 4)$

77. Rel max @ $(2, 10)$

Rel min @ $(4, 6)$

Abs. max : none

Abs. min: none

78. $x = 6, y = 6$

79. 15" x 10" x 3"

80. 10ft x 50 ft

Cost = \$1000

81. $x = 875$ candy bars

82. $y' = \frac{-e^{1/x}}{x^2}$

83. $y = 3x + 1$

84. $t = 7.7$ yrs

85. $\frac{dy}{dx} = \frac{-6}{5-x}$

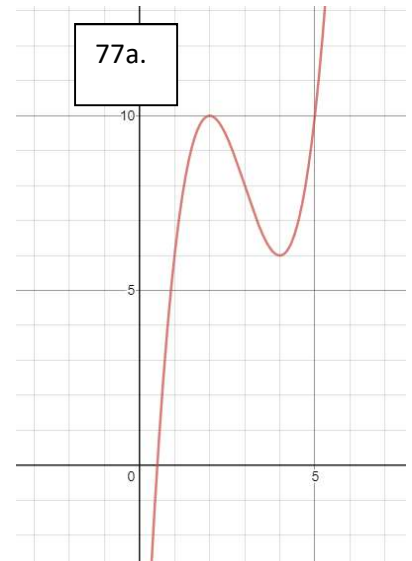
86. $f'(x) = x(1 + 2 \ln x)$

87. $y = 2828$ bacteria

88. $\frac{2}{5}x^5 + x^3 - x^2 + C$

89. $\frac{-1}{2(x^2-7)^3} + C$

90. $\frac{1}{2} \ln |x^2 - 1| + C$



$$91. \frac{-1}{3} e^{\frac{3}{x}} + C$$

$$92. \frac{1}{4} (x^4 - 2)^2 + C$$

$$93. \frac{3}{2} x^2 - 5 \ln|x| + C$$

$$94. \frac{-3}{x} + C$$

$$95. 3(y^2 + 1)^{\frac{1}{2}} + C$$

$$96. \frac{1}{10} e^{5x^2} + C$$

$$97. \frac{-1}{3} \ln|1 - x^3| + C$$

$$98. -319.65$$

$$99. 0$$

$$100. \frac{4}{3}$$

$$101. \frac{9}{2}$$

$$102. 8.04$$

$$103. 55.5$$