

1. The slope of the tangent line to the graph at the point $(2, -2)$ is
 - A) -2
 - B) 2
 - C)
 - D) $\frac{1}{2}$
 - E) -4

2. The slope of the tangent line to the graph at the point $(4, 6)$ is
 - A)
 - B)
 - C)
 - D)
 - E)

3. The slope of the tangent line to the graph at the point $(-1, 1)$ is
 - A) -3
 - B) -2
 - C) -1
 - D) 1
 - E) 2

4. The slope of the tangent line to the graph at the point $(-3, 2)$ is
 - A) -3
 - B) -2
 - C) 2
 - D) 3
 - E) 4

5. An equation of the tangent line to the graph at the point $(-2, 6)$ is
 - A)
 - B)
 - C)
 - D)
 - E)

6. An equation of the tangent line to the graph at the point $(-1, -3)$ is
- A)
 - B)
 - C)
 - D)
 - E)
7. An equation of the tangent line to the graph at the point $(1, 3)$ is
- A)
 - B)
 - C)
 - D)
 - E)
8. An equation of the tangent line to the graph at the point $(6, 3)$ is
- A)
 - B)
 - C)
 - D)
 - E)
9. The instantaneous rate of change of at $c = 5$ is
- A) -3
 - B) 4
 - C) 5
 - D) 17
 - E) 20
10. The instantaneous rate of change of at $c = 3$ is
- A) -2
 - B) -1
 - C)
 - D)
 - E) 2

11. The instantaneous rate of change of at $c = 4$ is
- A)
 - B)
 - C)
 - D) 1
 - E)
12. The instantaneous rate of change of at $c = 2$ is
- A) -5
 - B) -3
 - C) -2
 - D) 3
 - E) 5
13. The instantaneous rate of change of at $c = 2$ is
- A) -3
 - B)
 - C)
 - D) 1
 - E) 3
14. The instantaneous rate of change of at $c = 9$ is
- A)
 - B)
 - C)
 - D)
 - E)
15. The derivative of at $x = -1$ is
- A) -6
 - B) -3
 - C) -1
 - D) 3
 - E) 6

16. The derivative of at $x = -2$ is

- A) -4
- B) -2
- C) -1
- D) 2
- E) 4

17. The derivative of at $x = 8$ is

- A)
- B)
- C)
- D)
- E)

18. The derivative of at $x = 0$ is

- A) -8
- B) 7
- C) 0
- D) 8
- E) -7

19. The derivative of at $x = -4$ is

- A) -5
- B) -4
- C) 1
- D) 4
- E) 5

20. The derivative of at $x = 4$ is

- A) -4
- B)
- C)
- D)
- E)

21. A pump is used to empty a 350-gallon hot tub. The table shows the amount of water, $W(t)$, measured in gallons, remaining in the hot tub at time t , measured in minutes after the pump is turned on.

T	0	15	30	45	60
$W(t)$	350	320	280	225	170

Approximate $W'(30)$ in this context.

- A) Water is draining at a rate of $28/3$ gallons per minute when the pump has been operating for 30 minutes.
- B) Forty gallons of water have been removed from the hot tub in 15 minutes of time.
- C) There are 280 gallons of water in the hot tub 30 minutes after the pump is turned on.
- D) Water is draining from the hot tub at a rate of $8/3$ gallons per minute when the pump has been operating for 30 minutes.
- E) Water is draining from the hot tub at a rate of 280 gallons per half-hour.

22. A dehumidifier is used to reduce the moisture in a basement. The level of moisture reported on the display panel when the dehumidifier is turned on is 70%. The percent moisture, $P(t)$, at time t is recorded for different times t in the table.

T	0	2	6	15	20
$P(t)$	70	67	60	53	51

Estimate $P'(20)$.

- A) -0.20% per minute
- B) -0.10% per minute
- C) 0.10% per minute
- D) 0.20% per minute
- E) 0.40% per minute

23. Let $f(x) = 4 - 2x$. Then $f'(x)$ is

- A) $-2x$
- B) $-x^2$
- C) $2x$
- D) x^2
- E) $4 - 2x$

24. Let $f(x) = x^2 - 4x + 4$. Then $f(2)$ is
- A) -4
 - B) 0
 - C) 2
 - D) 4
 - E) 8

25. Let $f(x) = x^2 - 4x + 4$. Then $f(4)$ is
- A) -4
 - B) 0
 - C) 2
 - D) 4
 - E) 8

26. Let $f(x) = x^2 - 4x + 4$. Then $f(0)$ is
- A) -4
 - B) 0
 - C) 2
 - D) 4
 - E) 8

27. Let $f(x) = x^2 - 4x + 4$. Then $f(1)$ is
- A) -4
 - B) 0
 - C) 2
 - D) 4
 - E) 8

28. Let $f(x) = x^2 - 4x + 4$. Then $f(3)$ is
- A) -4
 - B) 0
 - C) 1
 - D) 4
 - E) 8

29. Let $f(x) = \begin{cases} x^2 + 9 & x \leq 0 \\ x^2 - 9 & x > 0 \end{cases}$. Then $f'(x)$ does not exist if x is

- A) -9
- B) -5
- C) 5
- D) 6
- E) 9

30. Let $f(x) = \begin{cases} x^2 + 1 & x \leq 0 \\ x^2 - 1 & x > 0 \end{cases}$. Then $f'(x)$ does not exist if x is

- A) 0
- B) 1
- C) 4
- D) 9
- E) 16

31. Let $f(x) = \begin{cases} x^2 + 2 & x \leq 0 \\ x^2 - 2 & x > 0 \end{cases}$. Then $f'(x)$ does not exist if x is

- A) -2
- B) -1
- C) 0
- D) 1
- E) 2

32. Let $f(x) = \begin{cases} x^2 + 5 & x \leq 0 \\ x^2 - 5 & x > 0 \end{cases}$. Then $f'(x)$ does not exist if x is

- A) -5
- B) 1
- C) 2
- D) 3
- E) 5

33. Let $f(x) = \begin{cases} x^2 + 1 & x \leq 0 \\ x^2 - 1 & x > 0 \end{cases}$. Which of the following is true?

- A) f is discontinuous at 0 .
- B) f has a derivative at 0.
- C) f has a corner at (0,0).
- D) f has a horizontal tangent line at (0,0).
- E) f has a vertical tangent line at (0,0).

34. Let $f(x) = \begin{cases} x^2 \sin(1/x) & x \neq 0 \\ 0 & x = 0 \end{cases}$. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

35. Let $f(x) = \begin{cases} x^2 \cos(1/x) & x \neq 0 \\ 0 & x = 0 \end{cases}$. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

36. Let $f(x) = \begin{cases} x^2 \sin(1/x) & x \neq 0 \\ 0 & x = 0 \end{cases}$. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f does not have a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

37. Let $f(x) = \begin{cases} x^2 \cos(1/x) & x \neq 0 \\ 0 & x = 0 \end{cases}$. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f does not have a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

38. Let f be a function. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

39. Let f be a function. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f does not have a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

40. Let f be a function. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

41. Let f be a function. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

42. Let $f(x) = \begin{cases} x^2 \sin(1/x) & x \neq 0 \\ 0 & x = 0 \end{cases}$. Which of the following is true?
- A) f is discontinuous at 0.
 - B) f has a derivative at 0.
 - C) f has a corner at (0,0).
 - D) f has a horizontal tangent line at (0,0).
 - E) f has a vertical tangent line at (0,0).

43. Let $f(x) = \frac{1}{e^x}$. Then $f'(x)$ is
- A) $-\frac{1}{e^2}$
 - B) $\frac{1}{e^2}$
 - C) $-\frac{2}{e^2}$
 - D) $\frac{2}{e^2}$
 - E) 0

44. Let $f(x) = \sin(x)$. Then $f''(x)$ is
- A) 0
 - B) -1
 - C) 1
 - D) -2
 - E) 2

45. Let $f(x) = x^3$. Then $f'(x)$ if x is
- A) -3
 - B) -1
 - C) 0
 - D) 1
 - E) 3

46. Let $f(x) = x^2$. Then $f'(x)$ if x is
- A) -2
 - B) -1
 - C) 0
 - D) 1
 - E) 2

47. Let $f(x) = \frac{1}{x}$. Then $f'(x)$ if x is
- A) $\frac{1}{x^2}$
 - B) $-\frac{1}{x^2}$
 - C) 0
 - D) 1
 - E) e

48. Let $f(x) = \ln x$. Then $f'(x)$ if x is
- A) -6
 - B) $-\ln 6$
 - C) 0
 - D) $\ln 6$
 - E) 6

49. Let $f(x) = x^6$. Then $f'(x)$ for all x in
- A) $6x^5$
 - B) $6x^6$
 - C) $6x^7$
 - D) $6x^8$
 - E) $6x^9$

50. Let $f(x) = x^6$. Then $f'(x)$ for all x in
- A) $6x^5$
 - B) $6x^6$
 - C) $6x^7$
 - D) $6x^8$
 - E) $6x^9$

51. Let $f(x) = x^6$. Then $f'(x)$ for all x in
- A) $6x^5$
 - B) $6x^6$
 - C) $6x^7$
 - D) $6x^8$
 - E) $6x^9$

52. Let $f(x) = x^6$. Then $f(x) \geq 0$ for all x in
- A) $(-\infty, \infty)$
 - B) $[-6, 6]$
 - C) $[-1, 1]$
 - D) $[0, 6]$
 - E) $[0, \infty)$
53. Let $f(x) = x^6$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-1, 1]$
 - C) $[-1, 6]$
 - D) $[0, 6]$
 - E) $[0, \infty)$
54. Let $f(x) = x^6$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-1, 1]$
 - C) $[-1, 6]$
 - D) $[0, 6]$
 - E) $[0, \infty)$
55. Let $f(x) = x^6$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-1, 1]$
 - C) $[-1, 6]$
 - D) $(-3, 3)$
 - E) $[0, 6]$
56. Let $f(x) = x^6$. Then $f(x) \geq 0$ for all x in
- A) $(-\infty, \infty)$
 - B) $[-6, 6]$
 - C) $[-1, 1]$
 - D) $[0, 6]$
 - E) $[0, \infty)$

57. Let $f(x) = 6 - x^2$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-3, 3]$
 - C) $[-2, 2]$
 - D) $[-1, 1]$
 - E) $[0, 6]$
58. Let $f(x) = 6 - x^2$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-3, 3]$
 - C) $[-2, 2]$
 - D) $[-1, 1]$
 - E) $[0, 6]$
59. Let $f(x) = 6 - x^2$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-3, 3]$
 - C) $[-2, 2]$
 - D) $[-1, 1]$
 - E) $[0, 6]$
60. Let $f(x) = 6 - x^2$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-6, 6]$
 - B) $[-3, 3]$
 - C) $[-2, 2]$
 - D) $[-1, 1]$
 - E) $[0, 6]$

61. Let $f(x) = x^2 - 4x + 4$. Then which of the following is the largest interval, of those listed, for which $f(x) \leq 0$ for all x in that interval?
- A) $[-2, 2]$
 - B) $[-1, 1]$
 - C) $[0, 4]$
 - D) $[2, 4]$
 - E) $[4, 6]$
62. Let $f(x) = x^2 - 4x + 4$. Then which of the following is the largest interval, of those listed, for which $f(x) \geq 0$ for all x in that interval?
- A) $[-2, 2]$
 - B) $[-1, 1]$
 - C) $(0, 4)$
 - D) $[2, 4]$
 - E) $[4, 6]$
63. What is the equation of the normal line to the graph of $y = x^2 - 4x + 4$ at $x = 1$?
- A) $y = x$
 - B) $y = -x$
 - C) $y = x + 1$
 - D) $y = x - 1$
 - E) $y = x + 3$
64. What is the equation of the normal line to the graph of $y = x^2 - 4x + 4$ at $x = 9$?
- A) $y = x$
 - B) $y = -x$
 - C) $y = x + 1$
 - D) $y = x - 1$
 - E) $y = x + 3$
65. Let $f(x) = x^2 - 4x + 4$. Then $f'(x)$ is
- A) $2x - 4$
 - B) $2x + 4$
 - C) $x^2 - 4x + 4$
 - D) $x^2 - 4x + 8$
 - E) $x^2 - 4x + 16$

66. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

A) $x^2 - 2x + 2$
B) $x^2 - 2x + 1$
C) $x^2 - 2x + 0$
D) $x^2 - 2x + 1$
E) $x^2 - 2x + 2$

67. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(g \circ f)(x)$ is

A) $x^2 - 2x + 2$
B) $x^2 - 2x + 1$
C) $x^2 - 2x + 0$
D) $x^2 - 2x + 1$
E) $x^2 - 2x + 2$

68. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

A) $x^2 - 2x + 2$
B) $x^2 - 2x + 1$
C) $x^2 - 2x + 0$
D) $x^2 - 2x + 1$
E) $x^2 - 2x + 2$

69. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(g \circ f)(x)$ is

A) $x^2 - 2x + 2$
B) $x^2 - 2x + 1$
C) $x^2 - 2x + 0$
D) $x^2 - 2x + 1$
E) $x^2 - 2x + 2$

70. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

A) $x^2 - 2x + 2$
B) $x^2 - 2x + 1$
C) $x^2 - 2x + 0$
D) $x^2 - 2x + 1$
E) $x^2 - 2x + 2$

71. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

- A) $x^2 - 2x + 2$
- B) $x^2 - 2x + 1$
- C) $x^2 - 2x + 0$
- D) $x^2 - 2x + 1$
- E) $x^2 - 2x + 2$

72. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(g \circ f)(x)$ is

- A) $x^2 - 2x + 2$
- B) $x^2 - 2x + 1$
- C) $x^2 - 2x + 0$
- D) $x^2 - 2x + 1$
- E) $x^2 - 2x + 2$

73. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

- A) $x^2 - 2x + 2$
- B) $x^2 - 2x + 1$
- C) $x^2 - 2x + 0$
- D) $x^2 - 2x + 1$
- E) $x^2 - 2x + 2$

74. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(g \circ f)(x)$ is

- A) $x^2 - 2x + 2$
- B) $x^2 - 2x + 1$
- C) $x^2 - 2x + 0$
- D) $x^2 - 2x + 1$
- E) $x^2 - 2x + 2$

75. Let $f(x) = x^2 + 1$ and $g(x) = x - 1$. Then $(f \circ g)(x)$ is

- A) $x^2 - 2x + 2$
- B) $x^2 - 2x + 1$
- C) $x^2 - 2x + 0$
- D) $x^2 - 2x + 1$
- E) $x^2 - 2x + 2$

76. Let $f(x) = x^2 + 3x - 2$. Assuming $f'(x)$ is

- A) $2x + 3$
- B) $2x + 2$
- C) $2x + 1$
- D) $2x + 4$
- E) $2x + 5$

77. Let $f(x) = x^3 + 2x^2 - 5x + 7$. Then $f'(x)$ is

- A) $3x^2 + 4x - 5$
- B) $3x^2 + 4x - 7$
- C) $3x^2 + 4x - 5$
- D) $3x^2 + 4x - 7$
- E) $3x^2 + 4x - 5$

78. Let $f(x) = x^3 + 2x^2 - 5x + 7$. Assuming $f'(x)$ is

- A) $3x^2 + 4x - 5$
- B) $3x^2 + 4x - 7$
- C) $3x^2 + 4x - 5$
- D) $3x^2 + 4x - 7$
- E) $3x^2 + 4x - 5$

79. Let $f(x) = x^3 + 2x^2 - 5x + 7$. Then $f'(x)$ is

- A) $3x^2 + 4x - 5$
- B) $3x^2 + 4x - 7$
- C) $3x^2 + 4x - 5$
- D) $3x^2 + 4x - 7$
- E) $3x^2 + 4x - 5$

80. The fourth derivative of $f(x) = x^5 + 2x^4 - 5x^3 + 7x^2 - 3x + 1$ is

- A) $5x$
- B) $4x$
- C) $3x$
- D) $2x$
- E) x

81. The fifth derivative is

- A)
- B)
- C)
- D)
- E)

82. The second derivative is

- A)
- B)
- C) 0
- D)
- E)

83. The sixth derivative is

- A) 720
- B)
- C) 0
- D) -720
- E) $-720x$

84. Let Then is

- A)
- B) 0
- C)
- D)
- E)

85. Let Then is

- A)
- B)
- C)
- D)
- E)

86. Let $f(x) = x^2 + 1$. Then $f'(x)$ is

A) $2x$
 B) x^2
 C) x
 D) 1
 E) 2

87. Let $f(x) = x^3 - 2x^2 + 5x - 7$. Then $f'(x)$ is

A) $3x^2 - 4x + 5$
 B) $3x^2 - 4x - 7$
 C) $3x^2 - 4x + 7$
 D) $3x^2 - 4x - 5$
 E) $3x^2 - 4x - 7$

88. Let $f(x) = x^4 - 3x^3 + 2x^2 - x + 1$. Then $f'(x)$ is

A) $4x^3 - 9x^2 + 4x - 1$
 B) $4x^3 - 9x^2 + 4x + 1$
 C) $4x^3 - 9x^2 - 4x + 1$
 D) $4x^3 - 9x^2 - 4x - 1$
 E) $4x^3 - 9x^2 + 4x - 1$

89. Let $f(x) = x^5 - 2x^4 + 3x^3 - 4x^2 + 5x - 6$. Then $f'(x)$ is

A) $5x^4 - 8x^3 + 9x^2 - 8x + 5$
 B) $5x^4 - 8x^3 + 9x^2 - 8x - 6$
 C) $5x^4 - 8x^3 + 9x^2 - 8x + 5$
 D) $5x^4 - 8x^3 + 9x^2 - 8x - 6$
 E) $5x^4 - 8x^3 + 9x^2 - 8x + 5$

90. Let $f(x) = x^6 - 3x^5 + 2x^4 - x^3 + 4x^2 - 5x + 6$. Then $f'(x)$ is

A) $6x^5 - 15x^4 + 8x^3 - 3x^2 + 8x - 5$
 B) $6x^5 - 15x^4 + 8x^3 - 3x^2 + 8x - 5$
 C) $6x^5 - 15x^4 + 8x^3 - 3x^2 + 8x - 5$
 D) $6x^5 - 15x^4 + 8x^3 - 3x^2 + 8x - 5$
 E) $6x^5 - 15x^4 + 8x^3 - 3x^2 + 8x - 5$

91. Let $f(x) = \sin(x)$. Then $f'(x)$ is
- A) $\cos(x)$
 - B) $-\cos(x)$
 - C) $\sin(x)$
 - D) $-\sin(x)$
 - E) $\tan(x)$
92. Let $f(x) = \sin(x)$. If $f'(x) = 0$, then f has a horizontal tangent line for each x in
- A) $(0, \pi)$
 - B) $(\pi, 2\pi)$
 - C) $(-\pi, \pi)$
 - D) $(-\frac{\pi}{2}, \frac{\pi}{2})$
 - E) $(\frac{\pi}{2}, \frac{3\pi}{2})$
93. Let $f(x) = \cos(x)$. If $f'(x) = 0$, then f has a horizontal tangent line for each x in
- A) $(0, \pi)$
 - B) $\{\pi\}$
 - C) $(-\pi, \pi)$
 - D) $(-\frac{\pi}{2}, \frac{\pi}{2})$
 - E) $(\frac{\pi}{2}, \frac{3\pi}{2})$
94. Let $f(x) = \sin(x)$. If $f'(x) = 0$, then f has a horizontal tangent line for each x in
- A) $(0, \pi)$
 - B) $(\pi, 2\pi)$
 - C) $(-\pi, \pi)$
 - D) $(-\frac{\pi}{2}, \frac{\pi}{2})$
 - E) $(\frac{\pi}{2}, \frac{3\pi}{2})$
95. Let $f(x) = \cos(x)$. If $f'(x) = 0$, then f has a horizontal tangent line for each x in
- A) $\{\frac{\pi}{2}\}$
 - B) $(0, \pi)$
 - C) $(-\pi, \pi)$
 - D) $(-\frac{\pi}{2}, \frac{\pi}{2})$
 - E) $(\frac{\pi}{2}, \frac{3\pi}{2})$

96. Let $f(x) = \frac{1}{x^2}$. If $f'(x) = -\frac{2}{x^3}$, then f has a horizontal tangent line for each x in

A) $(-\infty, -1)$
 B) $(-1, 1)$
 C) $(1, \infty)$
 D) $(-\infty, 0) \cup (0, \infty)$
 E) $(-\infty, \infty)$

97. Let $f(x) = \frac{1}{x^2}$. If $f'(x) = -\frac{2}{x^3}$, then f has a horizontal tangent line for each x in

A) $(-\infty, -1)$
 B) $(-1, 1)$
 C) $(1, \infty)$
 D) $(-\infty, 0) \cup (0, \infty)$
 E) $(-\infty, \infty)$

98. Let $f(x) = \frac{1}{x^2}$. If $f'(x) = -\frac{2}{x^3}$, then f has a horizontal tangent line for each x in

A) $(-\infty, -1)$
 B) $(-1, 1)$
 C) $(1, \infty)$
 D) $(-\infty, 0) \cup (0, \infty)$
 E) $(-\infty, \infty)$

99. Let $f(x) = \frac{1}{x^2}$. Then $f'(x)$ is

A) $-\frac{2}{x^3}$
 B) $-\frac{2}{x^2}$
 C) $-\frac{2}{x}$
 D) $-\frac{1}{x^3}$
 E) $-\frac{1}{x^2}$

100. Let $f(x) = \frac{1}{x^2}$. Then $f''(x)$ is

A) $\frac{6}{x^4}$
 B) $-\frac{6}{x^4}$
 C) $\frac{6}{x^3}$
 D) $-\frac{6}{x^3}$
 E) $\frac{6}{x^2}$

101. Let $y = 2e^x \cos x$. Then y' is
- A) $2e^x \cos x$
 - B) $2e^x \sin x$
 - C) $2e^x (\cos x - \sin x)$
 - D) $2e^x (\cos x + \sin x)$
 - E) $2e^x \cos x$

102. Let $y = e^x \sin x$. Then y' is
- A) $e^x \sin x$
 - B) $e^x \cos x$
 - C) $e^x (\sin x + \cos x)$
 - D) $e^x (\sin x - \cos x)$
 - E) $e^x \sin x$

103. Let $y = e^x \cos x$. Then y' is
- A) $e^x \cos x$
 - B) $e^x \sin x$
 - C) $e^x (\cos x - \sin x)$
 - D) $e^x (\cos x + \sin x)$
 - E) $e^x \cos x$

104. Let $y = e^x \tan x$. Then y' is
- A) $e^x \tan x$
 - B) $e^x \sec^2 x$
 - C) $e^x (\tan x + \sec^2 x)$
 - D) $e^x (\tan x - \sec^2 x)$
 - E) $e^x \tan x$

Answer Key

1. A
2. B
3. E
4. B
5. A
6. C
7. A
8. C
9. B
10. C
11. C
12. A
13. B
14. D
15. A
16. C
17. D
18. A
19. B
20. D
21. D
22. B
23. A
24. A
25. D
26. D
27. A
28. D
29. E
30. A
31. C
32. E
33. C
34. E
35. A
36. D
37. D
38. A
39. D
40. B
41. A
42. B
43. E
44. A

45. E
46. D
47. C
48. D
49. E
50. E
51. B
52. B
53. A
54. D
55. C
56. C
57. C
58. E
59. E
60. D
61. E
62. C
63. D
64. B
65. A
66. C
67. C
68. D
69. E
70. C
71. A
72. C
73. E
74. D
75. D
76. D
77. B
78. B
79. A
80. D
81. E
82. D
83. A
84. E
85. C
86. D
87. D
88. D
89. C
90. B

- 91. D
- 92. A
- 93. E
- 94. E
- 95. E
- 96. E
- 97. E
- 98. A
- 99. E
- 100. B
- 101. A
- 102. A
- 103. B
- 104. A