104
Tangent Line Exercises
(With SOLUTIONS!)

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Calc. 1

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Preview

101. $2\cos(x)$ at $x_1 = -\frac{\pi}{3}$

102. $x - 2$ at $x_1 = 1$

103. $\sin(x)$ at $x_1 = \pi$

104. $-6\tan(x)$ at $x_1 = \frac{\pi}{6}$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
101.	$2\cos(x)$	$-\frac{\pi}{3}$	1	$-2\sin(x)$	$\sqrt{3}$	$y = \sqrt{3}\left(x + \frac{\pi}{3}\right) + 1$
102.	$x - 2$	1	-1	1	1	$y = x - 2$
103.	$\sin(x)$	π	0	$\cos(x)$	-1	$y = \pi - x$
104.	$-6\tan(x)$	$\frac{\pi}{6}$	$-2\sqrt{3}$	$-6\sec^2(x)$	-8	$y = -8x - 2\sqrt{3} + \frac{4\pi}{3}$

Find the equation of the tangent line for each of the following:

1. $-2\sin(x)$ at $x_1 = -\frac{\pi}{6}$

2. $x+4$ at $x_1 = -2$

3. $\frac{1}{(x+8)^2}$ at $x_1 = -7$

4. $-2\tan(x)$ at $x_1 = -\frac{2\pi}{3}$

5. $-\sin(x)$ at $x_1 = -\frac{\pi}{3}$

6. $-4\tan(x)$ at $x_1 = -\frac{\pi}{3}$

7. $\tan(x)$ at $x_1 = -\pi$

8. $\frac{1}{(x+9)^2}$ at $x_1 = -7$

9. $\frac{1}{x+5}$ at $x_1 = -4$

10. $-2\sin(x)$ at $x_1 = \frac{\pi}{6}$

11. $\frac{1}{(x+3)^2}$ at $x_1 = -2$

12. $(x+3)^2$ at $x_1 = -1$

13. $\frac{1}{x+1}$ at $x_1 = 0$

14. $x-8$ at $x_1 = 9$

15. $-\sin(x)$ at $x_1 = -\frac{3\pi}{4}$

16. $-2\cos(x)$ at $x_1 = -\frac{\pi}{6}$

17. $\sin(x)$ at $x_1 = -\frac{2\pi}{3}$

18. $\frac{1}{x+5}$ at $x_1 = -3$

19. $2\sin(x)$ at $x_1 = \frac{\pi}{3}$

20. $(x+5)^2$ at $x_1 = -6$

21. $-2\cos(x)$ at $x_1 =$ $-\frac{\pi}{4}$

22. $-\cos(x)$ at $x_1 =$ $\frac{\pi}{6}$

23. $\frac{1}{x+8}$ at $x_1 =$ -7

24. $-2\tan(x)$ at $x_1 =$ $\frac{2\pi}{3}$

25. $x-2$ at $x_1 =$ 3

26. $-9\tan(x)$ at $x_1 =$ 0

27. $2\tan(x)$ at $x_1 =$ $\frac{\pi}{3}$

28. $\sin(x)$ at $x_1 =$ 2π

29. $\sin(x)$ at $x_1 =$ $\frac{\pi}{6}$

30. $x+9$ at $x_1 =$ -10

31. $\cos(x)$ at $x_1 =$ $\frac{\pi}{2}$

32. $\frac{1}{x+3}$ at $x_1 =$ -4

33. $(x+6)^2$ at $x_1 =$ -5

34. $-7\tan(x)$ at $x_1 =$ $\frac{\pi}{3}$

35. $2\cos(x)$ at $x_1 =$ $\frac{\pi}{2}$

36. $-7\tan(x)$ at $x_1 =$ $-\frac{\pi}{6}$

37. $(x+2)^2$ at $x_1 =$ -3

38. $2\cos(x)$ at $x_1 =$ $-\frac{\pi}{6}$

39. $x-2$ at $x_1 =$ 3

40. $\frac{1}{x+8}$ at $x_1 =$ -9

41. $(x-7)^2$ at $x_1 =$ 6

42. $5\tan(x)$ at $x_1 =$ $-\frac{\pi}{3}$

43. $\frac{1}{(x+1)^2}$ at $x_1 =$ -2

44. $\sin(x)$ at $x_1 =$ $-\frac{\pi}{2}$

45. $\sin(x)$ at $x_1 =$ $\frac{2\pi}{3}$

46. $-\cos(x)$ at $x_1 =$ $\frac{\pi}{4}$

47. $\frac{1}{x+6}$ at $x_1 =$ -5

48. $(x+8)^2$ at $x_1 =$ -6

49. $(x-2)^2$ at $x_1 =$ 3

50. $-2\cos(x)$ at $x_1 =$ 0

51. $-4\tan(x)$ at $x_1 =$ $\frac{\pi}{3}$

52. $-\sin(x)$ at $x_1 =$ 2π

53. $\sin(x)$ at $x_1 =$ $\frac{\pi}{6}$

54. $\frac{1}{x-4}$ at $x_1 =$ 6

55. $-\cos(x)$ at $x_1 =$ $-\frac{\pi}{4}$

56. $x-5$ at $x_1 =$ 6

57. $-2\cos(x)$ at $x_1 =$ π

58. $\sin(x)$ at $x_1 =$ $\frac{2\pi}{3}$

59. $2\cos(x)$ at $x_1 =$ $\frac{\pi}{3}$

60. $x-7$ at $x_1 =$ 8

61. $\frac{1}{x-2}$ at $x_1 =$ 3

62. $\frac{1}{x+9}$ at $x_1 =$ -8

63. $\cos(x)$ at $x_1 =$ $\frac{\pi}{3}$

64. $-2\sin(x)$ at $x_1 =$ $\frac{\pi}{6}$

65. $\frac{1}{x-1}$ at $x_1 =$ 3

66. $-\sin(x)$ at $x_1 =$ $\frac{2\pi}{3}$

67. $-2\cos(x)$ at $x_1 =$ 2π

68. $-2\cos(x)$ at $x_1 =$ $\frac{\pi}{4}$

69. $-3\tan(x)$ at $x_1 =$ $-\frac{2\pi}{3}$

70. $\sin(x)$ at $x_1 =$ $-\frac{\pi}{2}$

71. $\sin(x)$ at $x_1 =$ $\frac{3\pi}{4}$

72. $(x-9)^2$ at $x_1 =$ 8

73. $\sin(x)$ at $x_1 =$ $-\frac{\pi}{6}$

74. $x+7$ at $x_1 =$ -5

75. $x-4$ at $x_1 =$ 6

76. $\sin(x)$ at $x_1 =$ $-\frac{\pi}{2}$

77. $-\sin(x)$ at $x_1 =$ $-\frac{\pi}{6}$

78. $\frac{1}{(x-1)^2}$ at $x_1 =$ 2

79. $\frac{1}{x-10}$ at $x_1 =$ 12

80. $2\cos(x)$ at $x_1 =$ $-\frac{\pi}{6}$

81. $2\tan(x)$ at $x_1 = \frac{2\pi}{3}$

82. $-8\tan(x)$ at $x_1 = 0$

83. $2\sin(x)$ at $x_1 = \frac{3\pi}{4}$

84. $(x+8)^2$ at $x_1 = -9$

85. $-2\sin(x)$ at $x_1 = -\frac{\pi}{6}$

86. $6\tan(x)$ at $x_1 = \pi$

87. $x+8$ at $x_1 = -7$

88. $2\cos(x)$ at $x_1 = \pi$

89. $\frac{1}{x+7}$ at $x_1 = -6$

90. $\cos(x)$ at $x_1 = -\pi$

91. $-2\cos(x)$ at $x_1 = 2\pi$

92. $\frac{1}{(x+6)^2}$ at $x_1 = -7$

93. $7\tan(x)$ at $x_1 = -2\pi$

94. $\frac{1}{(x-4)^2}$ at $x_1 = 5$

95. $\cos(x)$ at $x_1 = -\frac{\pi}{4}$

96. $3\tan(x)$ at $x_1 = \frac{2\pi}{3}$

97. $\frac{1}{x-4}$ at $x_1 = 3$

98. $2\cos(x)$ at $x_1 = \frac{\pi}{2}$

99. $2\sin(x)$ at $x_1 = \frac{3\pi}{4}$

100. $2\cos(x)$ at $x_1 = -\frac{\pi}{3}$

101. $2\cos(x)$ at $x_1 = -\frac{\pi}{3}$

102. $x - 2$ at $x_1 = 1$

103. $\sin(x)$ at $x_1 = \pi$

104. $-6\tan(x)$ at $x_1 = \frac{\pi}{6}$

Solutions

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
1.	$-2\sin(x)$	$-\frac{\pi}{6}$	1	$-2\cos(x)$	$-\sqrt{3}$	$y=-\sqrt{3}\left(x+\frac{\pi}{6}\right)+1$
2.	$x+4$	-2	2	1	1	$y=x+4$
3.	$\frac{1}{(x+8)^2}$	-7	1	$-\frac{2}{(x+8)^3}$	-2	$y=-2x-13$
4.	$-2\tan(x)$	$-\frac{2\pi}{3}$	$-2\sqrt{3}$	$-2\sec^2(x)$	-8	$y=-8x-\frac{16\pi}{3}-2\sqrt{3}$
5.	$-\sin(x)$	$-\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$-\cos(x)$	$-\frac{1}{2}$	$y=-\frac{x}{2}-\frac{\pi}{6}+\frac{\sqrt{3}}{2}$
6.	$-4\tan(x)$	$-\frac{\pi}{3}$	$4\sqrt{3}$	$-4\sec^2(x)$	-16	$y=-16x-\frac{16\pi}{3}+4\sqrt{3}$
7.	$\tan(x)$	$-\pi$	0	$\sec^2(x)$	1	$y=x+\pi$
8.	$\frac{1}{(x+9)^2}$	-7	$\frac{1}{4}$	$-\frac{2}{(x+9)^3}$	$-\frac{1}{4}$	$y=-\frac{x}{4}-\frac{3}{2}$
9.	$\frac{1}{x+5}$	-4	1	$-\frac{1}{(x+5)^2}$	-1	$y=-x-3$
10.	$-2\sin(x)$	$\frac{\pi}{6}$	-1	$-2\cos(x)$	$-\sqrt{3}$	$y=-\sqrt{3}\left(x-\frac{\pi}{6}\right)-1$
11.	$\frac{1}{(x+3)^2}$	-2	1	$-\frac{2}{(x+3)^3}$	-2	$y=-2x-3$
12.	$(x+3)^2$	-1	4	$2x+6$	4	$y=4x+8$
13.	$\frac{1}{x+1}$	0	1	$-\frac{1}{(x+1)^2}$	-1	$y=1-x$
14.	$x-8$	9	1	1	1	$y=x-8$
15.	$-\sin(x)$	$-\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$	$-\cos(x)$	$\frac{\sqrt{2}}{2}$	$y=\frac{\sqrt{2}\left(x+\frac{3\pi}{4}\right)}{2}+\frac{\sqrt{2}}{2}$
16.	$-2\cos(x)$	$-\frac{\pi}{6}$	$-\sqrt{3}$	$2\sin(x)$	-1	$y=-x-\sqrt{3}-\frac{\pi}{6}$
17.	$\sin(x)$	$-\frac{2\pi}{3}$	$-\frac{\sqrt{3}}{2}$	$\cos(x)$	$-\frac{1}{2}$	$y=-\frac{x}{2}-\frac{\pi}{3}-\frac{\sqrt{3}}{2}$
18.	$\frac{1}{x+5}$	-3	$\frac{1}{2}$	$-\frac{1}{(x+5)^2}$	$-\frac{1}{4}$	$y=-\frac{x}{4}-\frac{1}{4}$
19.	$2\sin(x)$	$\frac{\pi}{3}$	$\sqrt{3}$	$2\cos(x)$	1	$y=x-\frac{\pi}{3}+\sqrt{3}$
20.	$(x+5)^2$	-6	1	$2x+10$	-2	$y=-2x-11$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
21.	$-2\cos(x)$	$-\frac{\pi}{4}$	$-\sqrt{2}$	$2\sin(x)$	$-\sqrt{2}$	$y=-\sqrt{2}\left(x+\frac{\pi}{4}\right)-\sqrt{2}$
22.	$-\cos(x)$	$\frac{\pi}{6}$	$-\frac{\sqrt{3}}{2}$	$\sin(x)$	$\frac{1}{2}$	$y=\frac{x}{2}-\frac{\sqrt{3}}{2}-\frac{\pi}{12}$
23.	$\frac{1}{x+8}$	-7	1	$-\frac{1}{(x+8)^2}$	-1	$y=-x-6$
24.	$-2\tan(x)$	$\frac{2\pi}{3}$	$2\sqrt{3}$	$-2\sec^2(x)$	-8	$y=-8x+2\sqrt{3}+\frac{16\pi}{3}$
25.	$x-2$	3	1	1	1	$y=x-2$
26.	$-9\tan(x)$	0	0	$-9\sec^2(x)$	-9	$y=-9x$
27.	$2\tan(x)$	$\frac{\pi}{3}$	$2\sqrt{3}$	$2\sec^2(x)$	8	$y=8x-\frac{8\pi}{3}+2\sqrt{3}$
28.	$\sin(x)$	2π	0	$\cos(x)$	1	$y=x-2\pi$
29.	$\sin(x)$	$\frac{\pi}{6}$	$\frac{1}{2}$	$\cos(x)$	$\frac{\sqrt{3}}{2}$	$y=\frac{\sqrt{3}\left(x-\frac{\pi}{6}\right)}{2}+\frac{1}{2}$
30.	$x+9$	-10	-1	1	1	$y=x+9$
31.	$\cos(x)$	$\frac{\pi}{2}$	0	$-\sin(x)$	-1	$y=-x+\frac{\pi}{2}$
32.	$\frac{1}{x+3}$	-4	-1	$-\frac{1}{(x+3)^2}$	-1	$y=-x-5$
33.	$(x+6)^2$	-5	1	$2x+12$	2	$y=2x+11$
34.	$-7\tan(x)$	$\frac{\pi}{3}$	$-7\sqrt{3}$	$-7\sec^2(x)$	-28	$y=-28x-7\sqrt{3}+\frac{28\pi}{3}$
35.	$2\cos(x)$	$\frac{\pi}{2}$	0	$-2\sin(x)$	-2	$y=\pi-2x$
36.	$-7\tan(x)$	$-\frac{\pi}{6}$	$\frac{7\sqrt{3}}{3}$	$-7\sec^2(x)$	$-\frac{28}{3}$	$y=-\frac{28x}{3}-\frac{14\pi}{9}+\frac{7\sqrt{3}}{3}$
37.	$(x+2)^2$	-3	1	$2x+4$	-2	$y=-2x-5$
38.	$2\cos(x)$	$-\frac{\pi}{6}$	$\sqrt{3}$	$-2\sin(x)$	1	$y=x+\frac{\pi}{6}+\sqrt{3}$
39.	$x-2$	3	1	1	1	$y=x-2$
40.	$\frac{1}{x+8}$	-9	-1	$-\frac{1}{(x+8)^2}$	-1	$y=-x-10$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
41.	$(x-7)^2$	6	1	$2x-14$	-2	$y=13-2x$
42.	$5\tan(x)$	$-\frac{\pi}{3}$	$-5\sqrt{3}$	$5\sec^2(x)$	20	$y=20x-5\sqrt{3}+\frac{20\pi}{3}$
43.	$\frac{1}{(x+1)^2}$	-2	1	$-\frac{2}{(x+1)^3}$	2	$y=2x+5$
44.	$\sin(x)$	$-\frac{\pi}{2}$	-1	$\cos(x)$	0	$y=-1$
45.	$\sin(x)$	$\frac{2\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\cos(x)$	$-\frac{1}{2}$	$y=-\frac{x}{2}+\frac{\sqrt{3}}{2}+\frac{\pi}{3}$
46.	$-\cos(x)$	$\frac{\pi}{4}$	$-\frac{\sqrt{2}}{2}$	$\sin(x)$	$\frac{\sqrt{2}}{2}$	$y=\frac{\sqrt{2}\left(x-\frac{\pi}{4}\right)}{2}-\frac{\sqrt{2}}{2}$
47.	$\frac{1}{x+6}$	-5	1	$-\frac{1}{(x+6)^2}$	-1	$y=-x-4$
48.	$(x+8)^2$	-6	4	$2x+16$	4	$y=4x+28$
49.	$(x-2)^2$	3	1	$2x-4$	2	$y=2x-5$
50.	$-2\cos(x)$	0	-2	$2\sin(x)$	0	$y=-2$
51.	$-4\tan(x)$	$\frac{\pi}{3}$	$-4\sqrt{3}$	$-4\sec^2(x)$	-16	$y=-16x-4\sqrt{3}+\frac{16\pi}{3}$
52.	$-\sin(x)$	2π	0	$-\cos(x)$	-1	$y=-x+2\pi$
53.	$\sin(x)$	$\frac{\pi}{6}$	$\frac{1}{2}$	$\cos(x)$	$\frac{\sqrt{3}}{2}$	$y=\frac{\sqrt{3}\left(x-\frac{\pi}{6}\right)}{2}+\frac{1}{2}$
54.	$\frac{1}{x-4}$	6	$\frac{1}{2}$	$-\frac{1}{(x-4)^2}$	$-\frac{1}{4}$	$y=2-\frac{x}{4}$
55.	$-\cos(x)$	$-\frac{\pi}{4}$	$-\frac{\sqrt{2}}{2}$	$\sin(x)$	$-\frac{\sqrt{2}}{2}$	$y=-\frac{\sqrt{2}\left(x+\frac{\pi}{4}\right)}{2}-\frac{\sqrt{2}}{2}$
56.	$x-5$	6	1	1	1	$y=x-5$
57.	$-2\cos(x)$	π	2	$2\sin(x)$	0	$y=2$
58.	$\sin(x)$	$\frac{2\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\cos(x)$	$-\frac{1}{2}$	$y=-\frac{x}{2}+\frac{\sqrt{3}}{2}+\frac{\pi}{3}$
59.	$2\cos(x)$	$\frac{\pi}{3}$	1	$-2\sin(x)$	$-\sqrt{3}$	$y=-\sqrt{3}\left(x-\frac{\pi}{3}\right)+1$
60.	$x-7$	8	1	1	1	$y=x-7$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
61.	$\frac{1}{x-2}$	3	1	$-\frac{1}{(x-2)^2}$	-1	$y = 4 - x$
62.	$\frac{1}{x+9}$	-8	1	$-\frac{1}{(x+9)^2}$	-1	$y = -x - 7$
63.	$\cos(x)$	$\frac{\pi}{3}$	$\frac{1}{2}$	$-\sin(x)$	$-\frac{\sqrt{3}}{2}$	$y = -\frac{\sqrt{3}\left(x-\frac{\pi}{3}\right)}{2} + \frac{1}{2}$
64.	$-2\sin(x)$	$\frac{\pi}{6}$	-1	$-2\cos(x)$	$-\sqrt{3}$	$y = -\sqrt{3}\left(x - \frac{\pi}{6}\right) - 1$
65.	$\frac{1}{x-1}$	3	$\frac{1}{2}$	$-\frac{1}{(x-1)^2}$	$-\frac{1}{4}$	$y = \frac{5}{4} - \frac{x}{4}$
66.	$-\sin(x)$	$\frac{2\pi}{3}$	$-\frac{\sqrt{3}}{2}$	$-\cos(x)$	$\frac{1}{2}$	$y = \frac{x}{2} - \frac{\pi}{3} - \frac{\sqrt{3}}{2}$
67.	$-2\cos(x)$	2π	-2	$2\sin(x)$	0	$y = -2$
68.	$-2\cos(x)$	$\frac{\pi}{4}$	$-\sqrt{2}$	$2\sin(x)$	$\sqrt{2}$	$y = \sqrt{2}\left(x - \frac{\pi}{4}\right) - \sqrt{2}$
69.	$-3\tan(x)$	$-\frac{2\pi}{3}$	$-3\sqrt{3}$	$-3\sec^2(x)$	-12	$y = -12x - 8\pi - 3\sqrt{3}$
70.	$\sin(x)$	$-\frac{\pi}{2}$	-1	$\cos(x)$	0	$y = -1$
71.	$\sin(x)$	$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\cos(x)$	$-\frac{\sqrt{2}}{2}$	$y = -\frac{\sqrt{2}\left(x-\frac{3\pi}{4}\right)}{2} + \frac{\sqrt{2}}{2}$
72.	$(x-9)^2$	8	1	$2x - 18$	-2	$y = 17 - 2x$
73.	$\sin(x)$	$-\frac{\pi}{6}$	$-\frac{1}{2}$	$\cos(x)$	$\frac{\sqrt{3}}{2}$	$y = \frac{\sqrt{3}\left(x+\frac{\pi}{6}\right)}{2} - \frac{1}{2}$
74.	$x + 7$	-5	2	1	1	$y = x + 7$
75.	$x - 4$	6	2	1	1	$y = x - 4$
76.	$\sin(x)$	$-\frac{\pi}{2}$	-1	$\cos(x)$	0	$y = -1$
77.	$-\sin(x)$	$-\frac{\pi}{6}$	$\frac{1}{2}$	$-\cos(x)$	$-\frac{\sqrt{3}}{2}$	$y = -\frac{\sqrt{3}\left(x+\frac{\pi}{6}\right)}{2} + \frac{1}{2}$
78.	$\frac{1}{(x-1)^2}$	2	1	$-\frac{2}{(x-1)^3}$	-2	$y = 5 - 2x$
79.	$\frac{1}{x-10}$	12	$\frac{1}{2}$	$-\frac{1}{(x-10)^2}$	$-\frac{1}{4}$	$y = \frac{7}{2} - \frac{x}{4}$
80.	$2\cos(x)$	$-\frac{\pi}{6}$	$\sqrt{3}$	$-2\sin(x)$	1	$y = x + \frac{\pi}{6} + \sqrt{3}$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
81.	$2\tan(x)$	$\frac{2\pi}{3}$	$-2\sqrt{3}$	$2\sec^2(x)$	8	$y = 8x - \frac{16\pi}{3} - 2\sqrt{3}$
82.	$-8\tan(x)$	0	0	$-8\sec^2(x)$	-8	$y = -8x$
83.	$2\sin(x)$	$\frac{3\pi}{4}$	$\sqrt{2}$	$2\cos(x)$	$-\sqrt{2}$	$y = -\sqrt{2}\left(x - \frac{3\pi}{4}\right) + \sqrt{2}$
84.	$(x+8)^2$	-9	1	$2x+16$	-2	$y = -2x - 17$
85.	$-2\sin(x)$	$-\frac{\pi}{6}$	1	$-2\cos(x)$	$-\sqrt{3}$	$y = -\sqrt{3}\left(x + \frac{\pi}{6}\right) + 1$
86.	$6\tan(x)$	π	0	$6\sec^2(x)$	6	$y = 6x - 6\pi$
87.	$x+8$	-7	1	1	1	$y = x + 8$
88.	$2\cos(x)$	π	-2	$-2\sin(x)$	0	$y = -2$
89.	$\frac{1}{x+7}$	-6	1	$-\frac{1}{(x+7)^2}$	-1	$y = -x - 5$
90.	$\cos(x)$	$-\pi$	-1	$-\sin(x)$	0	$y = -1$
91.	$-2\cos(x)$	2π	-2	$2\sin(x)$	0	$y = -2$
92.	$\frac{1}{(x+6)^2}$	-7	1	$-\frac{2}{(x+6)^3}$	2	$y = 2x + 15$
93.	$7\tan(x)$	-2π	0	$7\sec^2(x)$	7	$y = 7x + 14\pi$
94.	$\frac{1}{(x-4)^2}$	5	1	$-\frac{2}{(x-4)^3}$	-2	$y = 11 - 2x$
95.	$\cos(x)$	$-\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$-\sin(x)$	$\frac{\sqrt{2}}{2}$	$y = \frac{\sqrt{2}\left(x + \frac{\pi}{4}\right)}{2} + \frac{\sqrt{2}}{2}$
96.	$3\tan(x)$	$\frac{2\pi}{3}$	$-3\sqrt{3}$	$3\sec^2(x)$	12	$y = 12x - 8\pi - 3\sqrt{3}$
97.	$\frac{1}{x-4}$	3	-1	$-\frac{1}{(x-4)^2}$	-1	$y = 2 - x$
98.	$2\cos(x)$	$\frac{\pi}{2}$	0	$-2\sin(x)$	-2	$y = \pi - 2x$
99.	$2\sin(x)$	$\frac{3\pi}{4}$	$\sqrt{2}$	$2\cos(x)$	$-\sqrt{2}$	$y = -\sqrt{2}\left(x - \frac{3\pi}{4}\right) + \sqrt{2}$
100.	$2\cos(x)$	$-\frac{\pi}{3}$	1	$-2\sin(x)$	$\sqrt{3}$	$y = \sqrt{3}\left(x + \frac{\pi}{3}\right) + 1$

n.	$f(x)$	x_1	y_1	$f'(x)$	m	tangent line
101.	$2\cos(x)$	$-\frac{\pi}{3}$	1	$-2\sin(x)$	$\sqrt{3}$	$y = \sqrt{3}\left(x + \frac{\pi}{3}\right) + 1$
102.	$x - 2$	1	-1	1	1	$y = x - 2$
103.	$\sin(x)$	π	0	$\cos(x)$	-1	$y = \pi - x$
104.	$-6\tan(x)$	$\frac{\pi}{6}$	$-2\sqrt{3}$	$-6\sec^2(x)$	-8	$y = -8x - 2\sqrt{3} + \frac{4\pi}{3}$