

State the equation of the tangent line at the given point:

<u>Function</u>	<u>Point</u>
31. $f(x) = \frac{3}{x^2}$	(1, 3)
32. $f(t) = 3 - \frac{3}{5t}$	$(\frac{2}{5}, 2)$
33. $f(x) = -\frac{1}{2} + \frac{7}{5}x^3$	$(0, -\frac{1}{2})$
34. $y = 3x^3 - 6$	(2, 18)

Use your calculator to find the equation of the tangent line.

Function	x value	y-value	Slope	Equation of the tangent line
35. $y = (2x + 1)^2$	x = 0			
36. $f(x) = 3(5 - x)^2$	x = 5			
37. $f(\theta) = 4 \sin \theta - \theta$	x = 0			
38. $g(t) = 2 + 3 \cos t$	x = $\pi$			

Find the Derivative:

39.  $f(x) = x^2 + 5 - 3x^{-2}$
41.  $g(t) = t^2 - \frac{4}{t^3}$
43.  $f(x) = \frac{x^3 - 3x^2 + 4}{x^2}$
45.  $y = x(x^2 + 1)$
47.  $f(x) = \sqrt{x} - 6\sqrt[3]{x}$
49.  $h(s) = s^{4/5} - s^{2/3}$
51.  $f(x) = 6\sqrt{x} + 5 \cos x$
40.  $f(x) = x^2 - 3x - 3x^{-2}$
42.  $f(x) = x + \frac{1}{x^2}$
44.  $h(x) = \frac{2x^2 - 3x + 1}{x}$
46.  $y = 3x(6x - 5x^2)$
48.  $f(x) = \sqrt[3]{x} + \sqrt[5]{x}$
50.  $f(t) = t^{2/3} - t^{1/3} + 4$
52.  $f(x) = \frac{2}{\sqrt[3]{x}} + 3 \cos x$

10. An equation of the line tangent to  $y = 4x^3 - 7x^2$  at  $x = 3$  is

(A)  $y + 45 = 66(x + 3)$

(B)  $y - 45 = 66(x - 3)$

(C)  $y = 66x$

(D)  $y = 66(x - 3)$

(E)  $y - 45 = \frac{-1}{66}(x - 3)$

17. Which of the following is an equation of the tangent line to the graph of  $y = x^4 - x^3 - x^2 + x + 1$  at the point  $(1, 1)$ ?

(A)  $y = 1$

(B)  $y = x$

(C)  $y = -2x + 3$

(D)  $y = 2x - 1$

(E)  $y = -x + 2$

C  
40. Which of the following is an equation of the line tangent to the graph of  $y = x^3 + x^2$  at  $y = 3$ ?

(A)  $y = 33x - 63$

(B)  $y = 33x - 135$

(C)  $y = 6.488x - 1.175$

(D)  $y = 6.488x - 4.620$

(E)  $y = 6.488x - 10.620$

C  
29. If  $f(x)$  is the function given by  $f(x) = e^{3x} + 1$ , at what value of  $x$  is the slope of the tangent line to  $f(x)$  equal to 2? 2.35

(A)  $-.135$

(B)  $0$

(C)  $.231$

(D)  $-.366$

(E)  $.693$