

PRACTICE PROBLEM SET 8

Now try these problems. The answers are in Chapter 21.

- Find the equation of the tangent to the graph of $y = 3x^2 - x$ at $x = 1$. $y - 2 = 5(x - 1)$
- Find the equation of the tangent to the graph of $y = x^3 - 3x$ at $x = 3$. $y - 18 = 24(x - 3)$
- Find the equation of the normal to the graph of $y = \sqrt{8x}$ at $x = 2$. $y - 4 = -(x - 2)$
- Find the equation of the tangent to the graph of $y = \frac{1}{\sqrt{x^2 + 7}}$ at $x = 3$. $y - \frac{1}{4} = -\frac{3}{64}(x - 3)$
- Find the equation of the normal to the graph of $y = \frac{x + 3}{x - 3}$ at $x = 4$. $y - 7 = \frac{1}{6}(x - 4)$
- Find the equation of the tangent to the graph of $y = 4 - 3x - x^2$ at $(0, 4)$. $y = -3x + 4$
- Find the equation of the tangent to the graph of $y = 2x^3 - 3x^2 - 12x + 20$ at $x = 2$. $y = 0$
- Find the equation of the tangent to the graph of $y = \frac{x^2 + 4}{x - 6}$ at $x = 5$. $y + 29 = -39(x - 5)$
- Find the equation of the tangent to the graph of $y = \sqrt{x^3 - 15}$ at $(4, 7)$. $y - 7 = \frac{24}{7}(x - 4)$
- Find the equation of the tangent to the graph of $y = (x^2 + 4x + 4)^2$ at $x = -2$. $y = 0$
- Find the values of x where the tangent to the graph of $y = 2x^3 - 8x$ has a slope equal to the slope of $y = x$. $x = \pm\sqrt{\frac{3}{2}}$
- Find the equation of the normal to the graph of $y = \frac{3x + 5}{x - 1}$ at $x = 3$. $y - 7 = \frac{1}{2}(x - 3)$
- Find the values of x where the normal to the graph of $(x - 9)^2$ is parallel to the y -axis. $x = 9$
- Find the coordinates where the tangent to the graph of $y = 8 - 3x - x^2$ is parallel to the x -axis. $(-\frac{3}{2}, \frac{41}{4})$
- Find the values of a , b , and c where the curves $y = x^2 + ax + b$ and $y = cx + x^2$ have a common tangent line at $(-1, 0)$. $a = 1, b = 0, c = 1$

KEY