Find the derivative of each function:

(1) $f(x) = \dfrac{x^2 - 5x + 3}{2x^3 + 1}$

(2) $f(x) = \dfrac{4 - \cos x}{5 + 2\sec x}$

(3) $f(x) = \dfrac{8x + \sqrt[3]{x}}{x^2 - \sqrt[3]{x}}$

(4) $f(x) = (8x^4 - 7x^3 + 2x)(4x^2 - 5x)$

(5) $f(x) = (\sqrt{x} + 3x^2 - 5)(9x^3 - 11x)$

(6) $f(x) = \tan^4\left(\dfrac{3x-1}{x^2}\right)$

(7) $f(x) = \sin^{-1}(e^x)$

(8) $f(x) = e^{3\sec x}$

(9) $f(x) = \operatorname{Tan}^{-1}(\sin x)$

(10) $f(x) = \ln(4x^3 + 8x)$

(11) $f(x) = \ln(1 + \csc x)$

(12) $f(x) = \sqrt{\frac{4x-2}{5x+1}}$

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

(13) $y = \tan(3x)$ at $x = \frac{\pi}{12}$

(14) $y = e^{x^2}$ at $x = 1$

(15) $y = \cos(\pi x)$ at $x = \frac{1}{6}$

(16) $x^3 + y^3 + y = 3$ at $(1, 1)$

(17) $2xy - y^4 = 1$ at $(1, 1)$

(18) $\ln(5x - 4) = y$ at $(1, 0)$

(19) $y = \sqrt[3]{3x+5}$ at $x=1$

(20) $y = 4 - \frac{2}{x}$ at $x=1$

Find $\frac{dy}{dx}$

(26) $x^4 + 3x^2y^2 - y^2 = 4$

(27) $2x^3 + 7xy + 3y^2 = 2$

(28) $x^2 + y^2 = 4xy$

(29) $e^{x+y} = x^2$

(30) $\sin(xy) = 4x^3 - 1$

Find the points (x, y) where the tangent line to:

(31) $y = x^2 - 8x + 11$ is parallel to the x-axis

(32) $y = 4x^2 + 16x - 2$ is parallel to $y = 4x - 2$

(33) $y = x^3 - 12x^2 + 30x + 1$ is parallel to $y = 9x + 3$

(34) $y = 2x^3 + 9x^2 - 20x$ is parallel to $y - 4x = 1$

(35) $y = 5x^2 + 8x - 7$ is parallel to the x-axis