

Find  $y'$ :

- (1)  $2xy^2 - 3x^2y + 8 = 0$       (2)  $2x^{3/2} - y^{3/2} + 3x + 3 = 0$       (3)  $3xy^2 + x^3y + 3x^2 = 10$   
 (4)  $\frac{4}{x} - \frac{5}{y} = 2y + 1$       (5)  $2\sqrt{y} - 3\sqrt{x} = 3$       (6)  $(y^3 + 2x)^2 = 9(x - y + 1)$   
 (7)  $\frac{2x}{x+y} = \frac{2y}{3} - 3$       (8)  $\sqrt{2x+y} = 3x^2 - 4x + 7$       (9)  $\sqrt{y-x} = -3x^2 + 2y$   
 (10)  $y^2 + 3\sqrt{x} = y + 2x$

Find the equation of the line tangent to the graph at the given point.

- (11)  $4x^2y - 3xy^2 + 45$       at     $(3, -1)$       (12)  $x^{4/3} + 2y^{4/3} + 2y = 5$       at     $(1, 1)$   
 (13)  $2x^2y - 4xy^3 + 2x = 24$       at     $(-3, 1)$       (14)  $\frac{2}{y} + \frac{3}{x} = 5$       at     $x = 1$   
 (15)  $3\sqrt{y} + 2\sqrt{x} = 9$       at     $x = 9$       (16)  $(y^2 + 5x)^2 = 6y + 30$       at     $(1, 1)$   
 (17)  $5\sqrt{x} - \sqrt{y} - 2x = y - 4$       at     $(4, 4)$       (18)  $x^2 + y^2 = \sqrt{-y - 2x} + 1$       at     $(-1, 1)$   
 (19)  $\sqrt[3]{x} + 2\sqrt[3]{y} = 7 - 4y$       at     $(1, 1)$       (20)  $x^3 + 3\sqrt{y} = 2y - 5x + 4$       at     $(1, 4)$

**ANSWERS:**

- (1)  $\frac{6xy - 2y^2}{4xy - 3x^2}$     (2)  $\frac{6\sqrt{6} + 6}{3\sqrt{y}}$     (3)  $\frac{-3y^2 - 3x^2y - 6x}{6xy + x^3}$     (4)  $\frac{4y^2}{5x^2 - 2x^2y^2}$     (5)  $\frac{3\sqrt{y}}{2\sqrt{x}}$   
 (6)  $\frac{9 - 4y^3 - 8x}{6y^5 + 12xy^2 + 9}$     (7)  $\frac{15 - 2y}{2x + 4y - 9}$     (8)  $(12x - 8)\sqrt{2x + y} - 2$     (9)  $\frac{12x\sqrt{y-x} - 1}{4\sqrt{y-x} - 1}$   
 (10)  $\frac{4\sqrt{x} - 3}{2\sqrt{x}(2y - 1)}$     (11)  $y = \frac{1}{2}x - \frac{5}{2}$     (12)  $y = -\frac{2}{7}x + \frac{9}{7}$     (13)  $y = \frac{7}{27}x + \frac{16}{9}$   
 (14)  $y = -\frac{3}{2}x + \frac{5}{2}$     (15)  $y = -\frac{2}{9}x + 3$     (16)  $y = -\frac{10}{3}x + \frac{13}{3}$     (17)  $y = -\frac{3}{5}x + \frac{32}{5}$   
 (18)  $y = \frac{2}{5}x + \frac{7}{5}$     (19)  $y = -\frac{1}{14}x + \frac{15}{14}$     (20)  $y = \frac{32}{5}x - \frac{12}{5}$