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Find dy/dx for each of the following.

1. $y = (2x + 5)^7$

2. $y = (1 - 3x^2)^4$

3. $y = \sqrt{x^3 + 1}$

4. $y = \frac{1}{(2x - 3)^3}$

5. $y = 5x^3(3x^2 - 1)^7$

6. $y = (2x - 3)^4(x^2 + 1)^3$

7. $y = \frac{1}{\sqrt{4x - 1}}$

8. $y = \frac{2x - 5}{3x + 1}$

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Find dy/dx for each of the following.

9. $y = \frac{x^2 + 1}{2x + 3}$

10. $x^2 + y^2 = 16$

11. $3x^2 - 5xy + 2y^2 - x + y - 4 = 0$

12. $x^2 + xy - 2y^2 = 5$

Find $\frac{d^2y}{dx^2}$.

13. $x^2 + y^2 = 4$

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Find $\frac{d^2y}{dx^2}$.

14. $x^3y^2 = 1$

Find the equations of the tangent and the normal to the graph of given equation at the given point.

15. $x^2 + y^2 - 10y = 0$; (-4,8)

16. $xy + 2x - 3y = 12$; (1,-5)