Derivatives of polynomial functions

Find the derivative of each function.

1. $f(x) = x^2$

2. $g(x) = 6x$

3. $h(x) = x^4$

4. $j(x) = 3x^2 + 4x$

5. $f(x) = x^3 - 6x$

6. $y = 6x^2 - 2x + 3$

7. $y = 3x^3 - x + 2$

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

9. $g(x) = 4x^5 + 6x^3$

10. $h(x) = x^7 + 4x^5$

11. Find the equation of the tangent line to the curve $y = 2x^3 - 4x$ that passes through the point $(3, 42)$.

ANSWERS

1. $f'(x) = 2x$

2. $g'(x) = 6$

3. $h'(x) = 4x^3$

4. $j'(x) = 6x + 4$

5. $f'(x) = 3x^2 - 6$

6. $\dfrac{dy}{dx} = 12x - 2$

7. $\dfrac{dy}{dx} = 9x^2 - 1$

8. $f'(x) = 5x^4 + 12x^2 - 7$

9. $g'(x) = 20x^4 + 18x^2$

10. $h'(x) = 7x^6 + 20x^4$

11. $y = 50x - 108$