2.2 Derivative Power Rule Practice/Review Worksheet

Derivative Power Rule:

$$\frac{d}{dx}x^n = n * x^{n-1}$$

Power Rule Conditions:

i) All Radicals converted to Rational Exponents
ii) All denominator variables brought up to the numerator
iii) All parentheses resolved, all terms expanded

Finding a Derivative **use the rules of differentiation to find the derivative of the function.**

1) $y = x^7$

2) $y = \frac{1}{x^5}$

3) $y = \frac{3}{x^7}$

4) $f(x) = \sqrt[5]{x}$

5) $f(t) = -2t^2 + 3t - 6$

6) $y = \frac{5}{2x^2}$

7) $y = \frac{3}{2x^4}$

8) $y = \frac{6}{(5x)^3}$

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Find the derivative of the functions below:

9) $g(t) = t^2 - \frac{4}{t^3}$

10) $f(x) = \frac{4x^3 + 3x^2}{x}$

11) $f(x) = \frac{2x^4 - x}{x^3}$

12) $y = x^2(2x^2 - 3x)$

13) $f(x) = \sqrt{x} - 6\sqrt[3]{x}$

14) $f(t) = t^{2/3} - t^{1/3} + 4$

Finding an Equation of a Tangent Line In Exercises **(a) find an equation of the tangent line to the graph of f at the given point.**

Equation of tangent line:

i) Find ordered pair $((x_1, y_1)$ using $f(x)$
ii) Find slope m using $f'(x)$
iii) $y - y_1 = m(x - x_1)$

15) $y = x^4 - 3x^2 + 2 \qquad (1, 0)$

16) $y = x^3 - 3x \qquad (2, 2)$