**Notes 45** **Name _____**

# Power Rule (3.2)

**Finding the Derivative of Polynomial Functions:** Differentiate the function.

1. $f(x) = 3x^2 - x - 9$

2. $f(x) = -\frac{3}{5}x^4 - \frac{1}{2}x^3 - 2x$

**Finding the Derivative of Radical Functions:** Differentiate the function.

3. $f(x) = 7\sqrt{4x}$

4. $f(x) = \frac{1}{3}\sqrt[7]{x^3} + x^2$

**Finding the Derivative of Rational Functions:** Differentiate the function.

5. $f(x) = \frac{3}{x^4} + \pi^2$

6. $f(x) = \frac{3}{x} - \frac{1}{2x^2} + \frac{5}{4x^3}$

**Finding the Derivative of Natural Base Functions:** Differentiate the function.

7. $f(x) = 5e^x - 7x$

8. $f(x) = -\frac{1}{2}e^x - 3\sqrt[3]{x}$

**Finding Derivatives of other Functions Using Exponents:** Differentiate the function.

9. $f(x) = \frac{3x^4 - 7x^2}{\sqrt{x}}$

10. $f(x) = \frac{5\sqrt[4]{x} + x^2}{2x^3}$

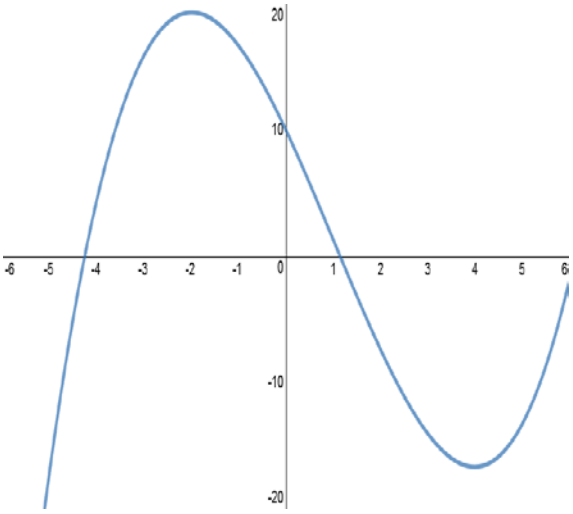
**Finding a Tangent Line:** Find an equation of the tangent line to the curve at the given point.

11. $f(x) = -x^3 + 2x$ at $(-2,4)$

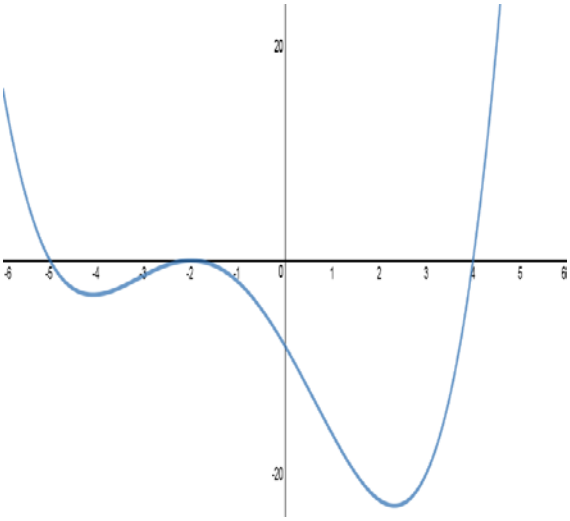
12. $f(x) = (3x+4)^2 + 1$ at $(-2,5)$

**Sketching a Derivative:** Sketch the derivative with the given function.

13.




14.




14. The quadratic function $s(t) = -16t^2 + 256t + 176$ models the ball's height above the ground, s(t), in feet, t seconds after it was thrown. Find the instantaneous velocity the ball is traveling at 4 seconds.