Calculus Class Worksheet #2 Unit 1 _____

Complete each of the following 'rules of differentiation'.

1. **If $f(x) = x^n$, then $f'(x) =$ _____.**

2. **If $f(x) = g(x) + h(x)$, then $f'(x) =$ _____.**

3. **If $f(x) = Cg(x)$, where C represents a constant, then $f'(x) =$ _____.**

4. **If $f(x) = C$, where C represents a constant, then $f'(x) =$ _____.**

Use the rules of differentiation to find the derivative of each of the following functions. If a function is not given in polynomial form, then you should first write the function in polynomial form and then find its derivative.

5. **$f(x) = x^2 + 7x + 4$ $f'(x) =$ _____**

6. **$f(x) = 5x^2 - 4x - 2$ $f'(x) =$ _____**

7. **$f(x) = x^3 - 7x^2 + x + 5$ $f'(x) =$ _____**

8. **$f(x) = 1 - 5x^3$ $f'(x) =$ _____**

9. **$f(x) = (2x + 3)(5x - 2)$ $f'(x) =$ _____**

10. **$f(x) = (5x - 1)^2$ $f'(x) =$ _____**

11. **$f(x) = (x - 2)^3$ $f'(x) =$ _____**

12. **$f(x) = (2x - 3)(x^2 + 5x - 3)$ $f'(x) =$ _____**