Name : _____ Score : _____

Teacher : _____ Date : _____

Chain Rule

Differentiate each function.

1) $f(x) = -2\sqrt{(5x^2 + 1)^5}$

2) $f(x) = 5(4x^3 - x)^3$

3) $y = \frac{5}{2}(6x^2 + 3)^4$

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

5) $f(x) = -6\sqrt{(2x^3 - 2x)^3}$

6) $y = \frac{5}{2}(6x + 2)^3$

7) $y = 3(5x + 4)^4$

8) $y = -4(-x - 3)^5$

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

10) $y = 2(4x^3 - 7x)^6$

Name : _____ Score : _____

Teacher : _____ Date : _____

Chain Rule

Differentiate each function.

1) $f(x) = -2\sqrt{(5x^2 + 1)^5}$

$f'(x) = (-50x)\sqrt{(5x^2 + 1)^3}$

2) $f(x) = 5(4x^3 - x)^3$

$f'(x) = (180x^2 - 15)(4x^3 - x)^2$

3) $y = \frac{5}{2}(6x^2 + 3)^4$

$\frac{dy}{dx} = (120x)(6x^2 + 3)^3$

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

$f'(x) = (-225x^2 + 75)(5x^3 - 5x)^5$

5) $f(x) = -6\sqrt{(2x^3 - 2x)^3}$

$f'(x) = (-54x^2 + 18)\sqrt{2x^3 - 2x}$

6) $y = \frac{5}{2}(6x + 2)^3$

$\frac{dy}{dx} = (45)(6x + 2)^2$

7) $y = 3(5x + 4)^4$

$\frac{dy}{dx} = (60)(5x + 4)^3$

8) $y = -4(-x - 3)^5$

$\frac{dy}{dx} = (20)(-x - 3)^4$

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

$f'(x) = (-6)(x - 1)^3$

10) $y = 2(4x^3 - 7x)^6$

$\frac{dy}{dx} = (144x^2 - 84)(4x^3 - 7x)^5$