

## 3.3a Derivative HW II

Date \_\_\_\_\_ Period \_\_\_\_\_

**For each problem, find the indicated derivative with respect to  $x$ .**

1)  $f(x) = 3x^5 - 3x^2 - x$  Find  $f^{(4)}$

2)  $f(x) = -2x^3 + 5x^2 - 2x$  Find  $f^{(4)}$

3)  $f(x) = -3x^3 - 2x^2 - 4x$  Find  $f^{(4)}$

4)  $f(x) = -x^3 + x^2 - 5x$  Find  $f^{(4)}$

**Differentiate each function with respect to  $x$ .**

5)  $y = (-x^3 + 3)(-x^5 - 2x^4 + 3)$

6)  $y = (3x^5 - 2x^2 - 5)(-4x^2 + 2)$

7)  $y = (3x^4 + 4)(2x^5 + 2x^2 - 4)$

### Answers to 3.3a Derivative HW II (ID: 1)

$$1) f^{(4)}(x) = 360x \quad 2) f^{(4)}(x) = 0 \quad 3) f^{(4)}(x) = 0 \quad 4) f^{(4)}(x) = 0$$

$$5) \frac{dy}{dx} = (-x^3 + 3)(-5x^4 - 8x^3) + (-x^5 - 2x^4 + 3) \cdot -3x^2 \\ = 8x^7 + 14x^6 - 15x^4 - 24x^3 - 9x^2$$

$$6) \frac{dy}{dx} = (3x^5 - 2x^2 - 5) \cdot -8x + (-4x^2 + 2)(15x^4 - 4x) \\ = -84x^6 + 30x^4 + 32x^3 + 32x$$

$$7) \frac{dy}{dx} = (3x^4 + 4)(10x^4 + 4x) + (2x^5 + 2x^2 - 4) \cdot 12x^3 \\ = 54x^8 + 36x^5 + 40x^4 - 48x^3 + 16x$$