Math 141 Worksheet 4

Show all work for full credit.

1. Find the derivative.

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

2. Find the derivative.

$$f(x) = 8\sqrt{x} + \frac{6}{\sqrt[3]{x}} + \pi^2$$

3. Find the derivative.

$$f(x) = (5x^7 + 3x^4 - 7x)(\sqrt[5]{x} + 2x^3 + 1)$$

4. Find the derivative.

$$f(x) = \frac{x^4 + 2x^2 + 1}{2x^5 - 7x^2 + 3}$$

5. Find the derivative.

$$f(x) = \frac{(3x^5 - 2)(2x^7 - 4x)}{5x^6 - 4x^2 + 3}$$

6. Find the equation of the tangent line to the graph of

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

when $x = 1$.

7. Find the equation of the tangent line to the graph of

$$f(x) = 4x^3 - 12x^2 - 36x + 108$$

when $x = 2$.

8. Find all values of x where the tangent line to the graph of

$$f(x) = 3x^3 + 7x^2 - 8x + 15$$

is horizontal.

9. Find all values of x where the tangent line to the graph of

$$f(x) = x^3 + 5x^2 - 5x + 1$$

is parallel to the line $y = 3x + 2$.