MATH 0120 Business Calculus. Suggested Exercises Sections 2.2 - 2.5

University of Pittsburgh, Summer 6W2 2019

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1. Use the definition of the derivative to find the derivative of the function $f(x) = \dfrac{3}{4x+1}$

2. Find the derivative of the following functions.

   (a) $f(x) = 6\sqrt[3]{x^2} - \dfrac{7}{\sqrt{x}} + \pi^3$

   (b) $f(x) = \dfrac{7}{5}x^{-1/5} + \sqrt{\pi}x^{3/2} + 4x^{1/3} - 2\sqrt{x} + 15$

3. Find the equation of the tangent line to the curve $y = \dfrac{x^3 - 1}{x^4 + 1}$ at $x = -1$.

4. Consider the functions $f(x) = \dfrac{4x-5}{x}$, $g(x) = \sqrt[5]{x^4} + 9x^{-1/4}$, and $h(x) = \dfrac{1}{x-1}$. Find

   (a) $(f(x)g(x))'$

   (b) $\left(\dfrac{f(x)}{g(x)}\right)'$

   (c) $(f(x)g(x)h(x))'$

   (d) $(g(x))''$