

3. Suppose that x units of a product will be sold if the price is set at $p(x) = \frac{50000 - x}{25000}$. Suppose the total cost for a manufacturer to produce x units of the product is $C(x) = 2100 + 0.25x$ dollars.

a) Find an equation for Revenue.

b) Find an equation for Profit.

c) Suppose 15000 units are currently produced, and the company's goal is to have the highest possible profit. Use marginal analysis to determine whether or not production should be increased. Explain your conclusion.

4. Find the equation of the line parallel to $4x - 3y = 2$ that goes through the point $(5, -2)$.

5. Find y' for the following functions (do not simplify) :

a) $y = (x^{-2} - x^{-3})(3x^{-1} + 4x^{-4})$

b) $y = 5x^4 - \frac{3}{4x^2} + 6\sqrt[3]{x^2} - \frac{1}{x} + \frac{2x^3 + 5}{x^2}$

6. Find the equation of the line tangent to the graph of $f(x) = \frac{\sqrt{x+1}}{2x-3}$ at the point where $x = 1$.

7. Consider the graph of the function $f(x)$ given below.

a) Find $\lim_{x \rightarrow 0} f(x)$.

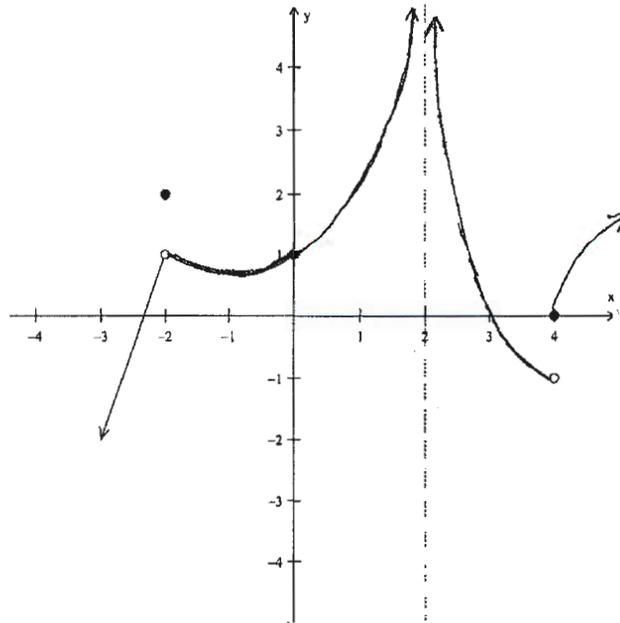
b) Find $\lim_{x \rightarrow -2} f(x)$.

c) Find $\lim_{x \rightarrow 2} f(x)$.

d) Find $\lim_{x \rightarrow 4^-} f(x)$.

e) Find $\lim_{x \rightarrow 4^+} f(x)$.

f) Find $\lim_{x \rightarrow 4} f(x)$.



8. For what value of A will the function $f(x) = \begin{cases} x^2 - 2x + 1 & \text{if } x \leq 3 \\ 2Ax + 3 & \text{if } x > 3 \end{cases}$ be continuous at $x = 3$? Show all your reasoning.