

3. Find the equation of the line through (4,-7) and perpendicular to the line $3x + 2y = 1$.

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

a) $y = \left(8x^2 - 3\sqrt{x} + \frac{3}{4x^2}\right)(5x^{-3} + 7)$

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

5. Suppose a company produces x custom tablets each week, and it costs the company \$350 per tablet to produce them. Suppose the company sells each tablet for $800 - x$ dollars, and at that price all of the tablets will be sold.
- Find the revenue equation.
 - Find the profit equation.
 - What is marginal profit?
 - If the company is currently producing 160 netbooks per week, should it increase or decrease production in order to raise its profit? Explain your answer.
6. Find the equation of the line tangent to $f(x) = \frac{\sqrt{x}(2-x^2)}{x}$ at the point where $x = 4$.

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

a) Find $\lim_{x \rightarrow 1} f(x)$.

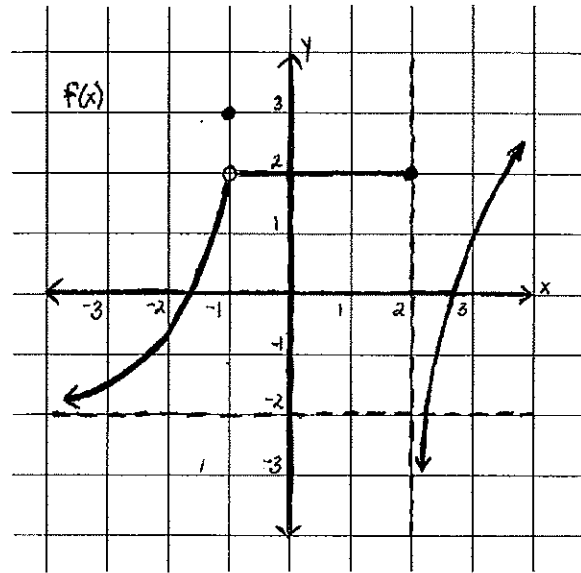
b) Find $\lim_{x \rightarrow 2^+} f(x)$.

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

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

e) Find $\lim_{x \rightarrow -1} f(x)$.

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



g) List the intervals where $f(x)$ is continuous.

8. Graph the function $f(x) = \begin{cases} \frac{1}{x} & \text{if } x \leq 2 \\ x & \text{if } x > 2 \end{cases}$. Be sure your graph is large enough

for me to see and that it is clearly labeled. Then describe the continuity of the function based on your graph.