Name _____

Homework 18
Section 5.5

1. (3ea) Determine (and simplify) the derivative of each function below.

   (a) $f(x) = \ln(x^2 - 4x)$

   (b) $g(x) = x^2 \ln(x^2)$

   (c) $h(x) = (\ln(2x))^3$

2. (5) Determine the equation of the line (in slope-intercept form) which is tangent to the graph of $f(x) = \ln(x^3 - 4x^2 - x) + x^2$ at the point where $x = 5$.

3. (6) When producing at least 2 dozen bowling balls, a company's daily profit from producing x dozen bowling balls is given by the function $P(x) = 9 - \ln\left(\frac{2}{3}x^3 - 15x^2 + 88x + 1\right)$, where profit is given in thousands of dollars. If the company can produce a maximum of 50 dozen bowling balls in a day, determine the company's maximum profit and how many bowling balls the company should produce in order to maximize their daily profit.