

**Math 165: Honors Calculus I**  
**Quiz 10** Dec. 3, 1998

Name: \_\_\_\_\_

1. Find the equation of the line tangent to the curve defined by

$$2x^2 + y^2 - \sin(\pi y/x) = 8$$

at the point  $(2, 1)$ .

2. Find the maximum and minimum of the function  $f(x) = 3x^4 + 2x^3 - 3x^2$  on the interval  $[-2, 1]$ .

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3. Sand is being poured into a pile that maintains the shape of a right circular cone whose base diameter is twice the height of the pile. Suppose at 2 P.M., the sand is being poured on at a rate of  $10 \text{ ft}^3/\text{sec}$  and the height of the pile is 5 ft. How fast is the diameter of the base increasing at 2 P.M.?