

Homework S6

1. Find $f'(x)$ and $f''(x)$ for each of the functions in problems 27, 28, 29, 32 on page 168 of the text.
2. Do problems 1, 3, 4, 7, and 8 on page 173 of the text.
3. Assume that each of the equations below determines y as a function (or more than one function) of x . For each, find y' , the derivative of y with respect to x , as a function of x and y .
 - (a) $y^3 - 2x^2 = 4x - 2y$.
 - (b) $y^3 + 2xy^2 - x^2y = 8$
 - (c) $\sin(xy) + \cos(xy) = 1$
4. Find y'' , the second derivative of y , as a function of x and y for the equations in parts (a) and (b) of problem 3 above.
5. Do problems 17, 18, 20, 21, and 24 on pages 180 and 181 of the text.
6. Sand is being dumped onto a conical pile at a constant rate of 20 cubic feet per minute. The moisture content of the sand is such that the height of the pile is always 3 times the diameter of the pile. How fast is the height of pile increasing when it is 10 feet tall?