

Work each of these problems **on this document** and **turn it in at 11:00 am on Tuesday, 1 March 2016**.

You should work this assignment in pencil so that you can erase and correct any errors (as opposed to scribbling out work). When writing your solutions, keep in mind the notational and formatting issues discussed and illustrated in lecture and lab; your solution will be evaluated for your success at using correct notation, your success at showing all relevant supporting work, and your success at using appropriate organizational strategies as well as for your success at coming up with a “correct answer.”

7.1.1 Exercises #6 Use the process of implicit differentiation to find a formula for $\frac{dy}{dx}$ for the curve generated by the equation $x y = e^{x y - 1}$.

7.1.1 Exercises

#5 Use the process of implicit differentiation to find a formula for $\frac{dy}{dx}$ for the curve generated by the equation $y = xe^y$. You will need to use the product rule for differentiation.

#7 The equation $y = xe^y$ is graphed in Figure 7.1.3. Find the slope **and** equation of the tangent line to this curve at the origin. (Please note that you already found the formula for $\frac{dy}{dx}$ in Exercise 5.)

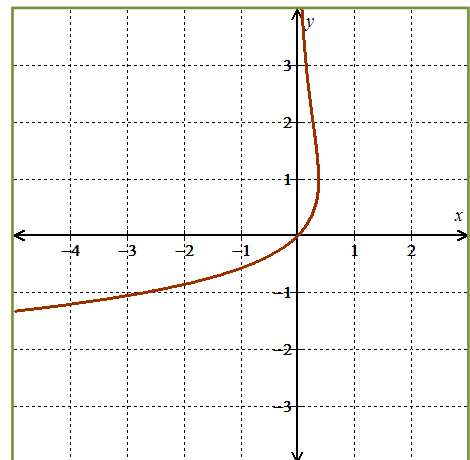


Figure 7.1.3: $y = xe^y$

8.2.1 Exercises #5

Slushy is flowing out of the bottom of a cup at the constant rate of $0.9 \text{ cm}^3/\text{s}$. The cup is the shape of a right circular cone. The height of the cup is 12 cm and the radius of the cup at the top is 3 cm. Determine the rate at which the depth of the remaining slushy changes at the instant there are exactly $8\pi \text{ cm}^3$ of slushy remaining in the cup. Make sure to show all of your work as we practiced in lecture.

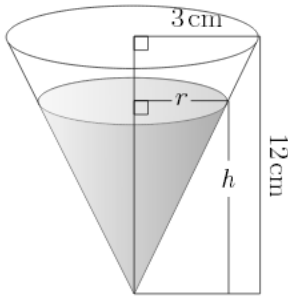


Figure 8.2.6: Slushy Cone