

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the value of the derivative $\frac{dy}{dx}$ at $(x, y) = (-2, -1)$ if y is implicitly defined in terms of x by $x^2y^2 + 4y = x + 2$.

2. A large snowball is melting so that its radius is decreasing at the rate of 2 inches per hour. How fast is the volume decreasing at the moment when its radius is 3 inches?

Hint: The volume of a sphere of radius r is given by $V = \frac{4}{3}\pi r^3$.