Name: —————————————————————————————— —————— / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

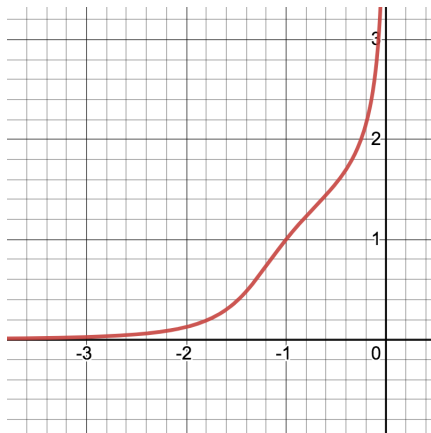1. **[16 points]** Find $\dfrac{dy}{dx}$. You do not have to simplify

   a. $y = \cos^{-1}(\sqrt{x})$

   b. $y = \left(x + \sin^{-1}(x)\right)^5$

   c. $y = e^{2x}\cos(x)$

   d. $y = \ln(8x + 1)$

2. [5 points] The graph of $x^4 y - x y^3 = 2$ is sketched below.

(a) Find dy/dx.

(b) Write an equation for the line **normal** to the curve at the point $(-1, 1)$ and **sketch** the line on the graph.

3. [4 points] Find the derivative of $y = (x)^{\sin(x)}$. (Recall that you will have to use **logarithmic differentiation**.)