Consider the graph of \( f(x) \) shown below:

1. Multiple choice: Choose the best answer (5 points each, 15 points total)
   A. The critical number(s) for \( f(x) \) is/are which of the following?
      a. \( x = -5 \)
      b. \( x = 3 \)
      c. \( x = -6, x = 1 \)
      d. \( x = -6, x = -5, x = -3, x = -1, x = 3, x = 4, x = 6 \)
   B. At what number(s) \( x \) does \( f(x) \) have a local minimum?
      a. \( x = -3 \)
      b. \( x = -3, x = 3 \)
      c. \( x = -6, x = 6 \)
      d. \( x = -6, x = -3, x = 3, x = 6 \)
   C. At what number(s) \( x \) does \( f(x) \) have a local maximum?
      a. \( x = -5 \)
      b. \( x = -1, x = 4 \)
      c. \( x = -5, x = -1, x = 4 \)
      d. \( x = -5, x = -1, x = 3, x = 4 \)

2. Short answer: Evaluate the following based on the graph (5 points each, 10 points total)
   A. At what number \( x \) does \( f(x) \) have a global maximum?
      \(-5\)
   B. What is the corresponding maximum value?
      \(4\)
3. Problem solving: Please show all your work. (25 points each, 75 points total)

A. Find $dy/dx$ by implicit differentiation: $x^2 + xy - y^2 = 9$

$$2x + y + xy' - 2yy' = 0$$

$$y' = \frac{-2x - y}{x - 2y}$$

B. Find the derivative of the function. Simplify where possible: $f(x) = \sqrt{1 - x^2} \arccos x$

$$f'(x) = \left(\frac{-2x}{2\sqrt{1-x^2}}\right) \arccos x + \left(\sqrt{1-x^2}\right)\left(\frac{-1}{\sqrt{1-x^2}}\right)$$

$$= - \frac{x \arccos x}{\sqrt{1-x^2}} - 1$$

C. Find the critical number(s) of $f(x) = x^3 - 3x^2 + 1$

$$f'(x) = 3x^2 - 6x = 3x(x-2)$$

Critical numbers: $0, 2$