

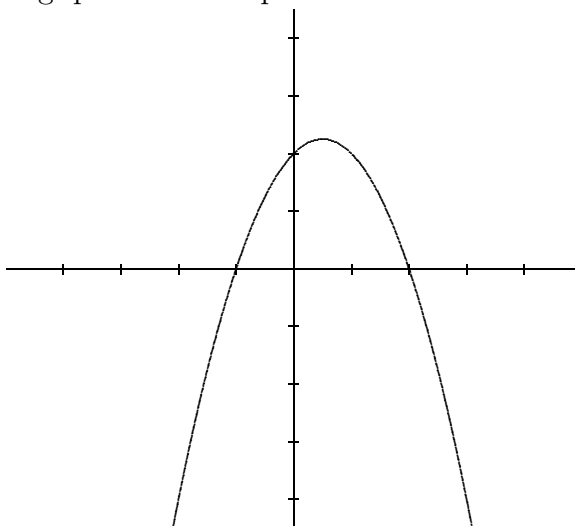
April 2000

Your name \_\_\_\_\_

Problems count 5 points each.

1. What is the (implied) domain of the function  $h(x) = (x + 1)^2 \cdot x \cdot \sqrt{4 - x^2}$ ? Also, how many zeros does it have?

2. The graph of  $y = ax^2 + bx + c$  is shown for certain values of  $a, b$ , and  $c$ . Which of the following quantities are positive? Circle all that apply.



- (A)  $a$     (B)  $c$     (C)  $b^2 - 4ac$     (D)  $9a + 3b + c$     (E)  $a + b + c$

3. Solve  $\sqrt{5 + x} = 5\sqrt{x}$ .

4. Find an equation for the line perpendicular to  $2x - y = 3$  that goes through the point  $(1, 3)$ .

5. Solve  $x + 1 = 12/x$ .

6. Find an  $x$  such that  $\log_{10}(6x^2 - 3) = 2$ .

7. Solve the inequality

$$x^3 - x^2 \leq 12x - 2x^2.$$

8. What is the time required for a 6% investment compounded monthly to double? ....to triple?

9. Solve  $\frac{1}{x-1} + \frac{x}{x+1} = 4$ .

10. Find

$$\log_4 \left( \frac{8x^3}{2y} \right)$$

in terms of  $x$  and  $y$ .