

Solve the problem.

- 1) Show that  $f$  and  $g$  are inverse functions or state that they are not.

$$f(x) = \sqrt[3]{-8x - 6}; g(x) = -\frac{x^3 + 6}{8}$$

- 2) How much money needs to be invested now to get \$2000 after 4 years at 8% compounded quarterly? Express your answer to the nearest dollar.

- 3) One solution of  $x^3 - 5x^2 + 5x - 1 = 0$  is 1. Find the other two solutions.

- 4) A developer wants to enclose a rectangular grassy lot that borders a city street for parking. If the developer has 312 feet of fencing and does not fence the side along the street, what is the largest area that can be enclosed?

Use a graphing utility to graph the function over the indicated interval and approximate any local maxima and local minima. Determine where the function is increasing and where it is decreasing. If necessary, round answers to two decimal places.

5)  $f(x) = x^3 - 4x^2 + 6; (-1, 4)$

Solve the inequality.

6)  $\frac{(x+5)(x-2)}{x-1} \geq 0$

Find the general form of the equation of the circle.

- 7) With endpoints of a diameter at (5, 9) and (-1, 3)

Find an equation for the line with the given properties. Express the answer using the slope-intercept form of the equation of a line.

- 8) Perpendicular to the line  $y = \frac{1}{7}x + 3;$   
containing the point (2, -5)

Solve the equation.

9)  $\log_2(3x - 2) - \log_2(x - 5) = 4$

10)  $(e^x)^x \cdot e^{63} = e^{16x}$

Analyze the graph of the rational function for the given step.

- 11) Find the vertical asymptote(s) and/or hole(s)

$$\text{for } R(x) = \frac{x^2 + x - 2}{x^2 - x - 6}$$

Find the vertex and axis of symmetry of the graph of the function.

12)  $f(x) = -6x^2 + 12x - 2$

Find the indicated composite for the pair of functions.

13)  $(f \circ g)(x): f(x) = \frac{1}{x+4}, g(x) = \frac{5}{3x}$

Answer the question about the given function.

- 14) Given the function  $f(x) = \frac{x^2 - 9}{x + 3}$ , if  $x = -1$ , what is  $f(x)$ ? What point is on the graph of  $f$ ?

Form a polynomial  $f(x)$  with real coefficients having the given degree and zeros.

- 15) Degree: 3; zeros: -3 and  $3 - 2i$

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15