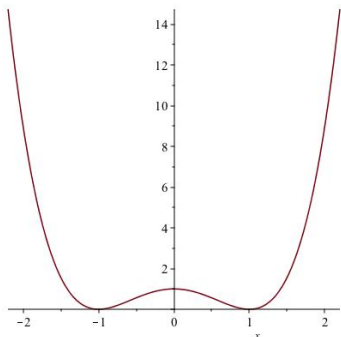


## Review Problems for Math1100 Exam 1

- Find the standard form of the equation of the circle for which the center is  $(3,-2)$  and has a solution point  $(-1,1)$ .
- Find the x and y-intercepts, Domain and Range and carefully sketch the graph of the following equations.
  - $y = |x - 4| - 4$
  - $y = (-x + 1)^2 - 4$
- Find the equation of the line that passes through the point  $(1,-2)$  and is parallel to  $y = 1 - 2x$ .
- Determine the domain of the following functions.
  - $f(x) = \sqrt{25 - x}$
  - $f(x) = \frac{\sqrt{x-1}}{1-x}$
- Is the function even, odd or neither  $f(x) = \frac{x}{x^2 + 1}$

6.  $f(x) = (x^2 - 1)^2$



- Determine the intervals where  $f(x)$  is increasing, decreasing and constant.
  - Find the zeros of  $f(x)$ .
  - Find any relative maximum or relative minimums.
  - State the domain and range of  $f(x)$ .
  - Determine whether the function is even, odd or neither.
7. Identify the transformation of the graph  $f(x)$  and sketch  $h(x)$ .
- $$f(x) = \sqrt{x} \quad h(x) = \sqrt{-x-3} + 3$$

8. Write the function that result from taking the following actions in order. Sketch the resulting graph. Let  $f(x) = \sqrt{x}$ . Move  $f(x)$  down 4 units; reflect about the x-axis and reflect about the y-axis.
9. Evaluate the function as indicated.
- $f(x) = 5x + 1$
  - $f(-4)$
  - $f(t^2)$
  - $f(x+1)$
  - $\frac{f(x+h) - f(x)}{h}$
10. Solve the following systems of equations.
- $$\begin{cases} x - y = 0 \\ 2x + y = 0 \end{cases}$$
11. Find  $(f+g)(x)$ ,  $(f-g)(x)$ ,  $(fg)(x)$ ,  $(f/g)(x)$ ,  $f \circ g$ ,  $g \circ f$  for each of the following functions. Find the domain for  $f \circ g$ ,  $g \circ f$ .
- $$f(x) = x + 2 \quad g(x) = \sqrt{x+1}$$
12. Find  $f^{-1}(x)$  and verify that  $f(f^{-1}(x)) = f^{-1}(f(x)) = x$ .
- $$f(x) = \sqrt{x+1}$$
13. Solve  $x^2 - 3x + 2 \geq 0$ .
14. Sketch the following systems of equations.
- $$f(x) \begin{cases} 2x+1 & x \leq -1 \\ x^2+2 & x > -1 \end{cases}$$
15. Let  $f(x) = \sqrt{x+1}$
- Determine the average rate of change from  $x_1 = -1$  to  $x_2 = 8$ .
  - Write the equation of the secant line between  $f(-1)$  and  $f(8)$ .