Looking for Domains

(a) Nine of the functions have domain the set of all real numbers. Which three do not?

(b) One of the functions has domain the set of all reals except 0. Which function is it, and why isn't zero in its domain?

(c) Which two functions have no negative numbers in their domains? Of these two, which one is defined at zero?

Looking for Continuity

Only two of twelve functions have points of discontinuity. Are these points in the domain of the function?

Looking for Boundedness

Only three of the twelve basic functions are bounded (above and below). Which three?

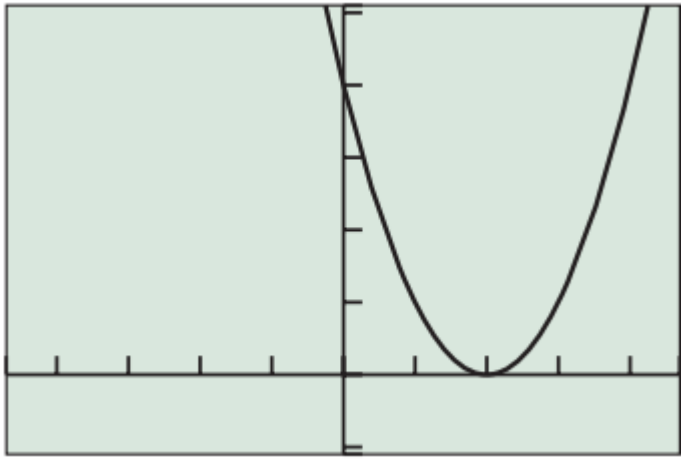
Looking for Symmetry

Three of the twelve basic functions are even. Which are they?

Analyzing a Function Graphically

Graph the function $y = (x - 2)^2$. Then answer the following questions:

(a) On what interval is the function increasing? On what interval is it decreasing?



(b) Is the function odd, even, or neither?

(c) Does the function have any extrema?

(d) How does the graph relate to the graph of the basic function $y = x^2$?

EXPLORATION 1 Looking for Asymptotes

1. Two of the basic functions have vertical asymptotes at $x = 0$. Which two?

2. Form a new function by adding these functions together. Does the new function have a vertical asymptote at $x = 0$?

3. Three of the basic functions have horizontal asymptotes at $y = 0$. Which three?

4. Form a new function by adding these functions together. Does the new function have a horizontal asymptote at $y = 0$?

5. Graph $f(x) = 1/x$, $g(x) = 1/(2x^2 - x)$, and $h(x) = f(x) + g(x)$. Does $h(x)$ have a vertical asymptote at $x = 0$?