

## SECTION 2-5 EXAMPLES

1. Sketch the graph of a function with a removable discontinuity at  $x = 2$ , a jump discontinuity at  $x = -2$  and that is continuous for all other real numbers.

2. Determine where the function  $h(x) = \begin{cases} \sin x & x < \pi \\ 0 & x = \pi \\ x + 1 - \pi & \pi < x \end{cases}$  is not continuous and **justify** your answer. Sketch the graph of the function.

3. Use continuity to evaluate the limit  $\lim_{x \rightarrow 10} \frac{x^2}{\sqrt{x-5}}$ .

4. Determine the value of  $c$  that will make  $f(x) = \begin{cases} c - x^2 & x \leq 1 \\ 5x - 2 & x > 1 \end{cases}$  continuous everywhere.

5. Use the Intermediate Value Theorem to show that there is a root of the equation  $5 + 2x - x^4 = 0$  in the interval  $(1, 2)$ .