

1. Find each of the following limits.

a.  $\lim_{t \rightarrow 3} (4t + 7)$

b.  $\lim_{x \rightarrow 1} \frac{x^2 - 5x + 6}{x^2 - 3x + 1}$

2. Let  $f(x) = \begin{cases} x^2 + 2 & x \leq 1 \\ -3x + 1 & x > 1 \end{cases}$

Sketch the graph of  $y = f(x)$  and use it to find the following:

a.  $f(1)$

b.  $\lim_{x \rightarrow 1^-} f(x)$

c.  $\lim_{x \rightarrow 1^+} f(x)$

d.  $\lim_{x \rightarrow 1} f(x)$

e.  $f(2)$

f.  $\lim_{x \rightarrow 2^-} f(x)$

g.  $\lim_{x \rightarrow 2^+} f(x)$

h.  $\lim_{x \rightarrow 2} f(x)$

3. Sketch a graph of  $y = |x|$  and use it to find  $\lim_{x \rightarrow 0^-} f(x)$ ,  $\lim_{x \rightarrow 0^+} f(x)$  and  $\lim_{x \rightarrow 0} f(x)$ .

4. Sketch a graph of  $y = \frac{|x|}{x}$  and use it to find  $\lim_{x \rightarrow 0^-} f(x)$ ,  $\lim_{x \rightarrow 0^+} f(x)$  and  $\lim_{x \rightarrow 0} f(x)$ .