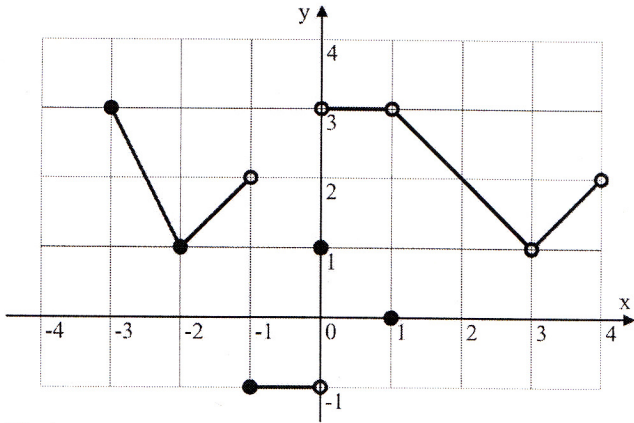


Answer (or Solution)

Practice Questions

a) 1
 b) DNE
 c) 3
 d) 1

1. Consider the function $f(x)$ defined by the following graph:



Find:
 a) $\lim_{x \rightarrow -2} f(x)$ b) $\lim_{x \rightarrow -1} f(x)$
 c) $\lim_{x \rightarrow 1} f(x)$ d) $\lim_{x \rightarrow 3} f(x)$

a) -7 b) 1
 c) 1 d) $\frac{1}{2}$

2. Evaluate the following limits.

a) $\lim_{x \rightarrow -1} (x^3 - 2x^2 + 3x - 1)$ b) $\lim_{x \rightarrow 2} \frac{x + x^2}{x^3 - 2}$
 c) $\lim_{x \rightarrow \pi/2} \sqrt{\sin x}$ d) $\lim_{x \rightarrow \pi} 2^{\cos x}$

a) DNE
 b) 0
 c) 1

3. Consider the function:

$$f(x) = \begin{cases} x+1 & \text{if } x < -1 \\ x^2 & \text{if } -1 \leq x \leq 1 \\ \sqrt{x} & \text{if } x > 1 \end{cases}$$

Find the following limits, if they exit.

a) $\lim_{x \rightarrow -1} f(t)$ b) $\lim_{x \rightarrow 0} f(t)$ c) $\lim_{x \rightarrow 1} f(t)$

a) -4 b) 3
 c) 3 d) 2
 e) 27 f) $-\frac{1}{4}$

4. Evaluate.

a) $\lim_{x \rightarrow -2} \frac{x^2 - 4}{x + 2}$ b) $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x - 1}$
 c) $\lim_{x \rightarrow 2} \frac{x^3 - 8}{x^2 - 4}$ d) $\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{x^2 - 4x + 3}$
 e) $\lim_{x \rightarrow -3} \frac{x^3 + 27}{x + 3}$ f) $\lim_{x \rightarrow 2} \frac{\frac{1}{x} - \frac{1}{2}}{x - 2}$

a) 4 b) $-\frac{1}{2}$
 c) $\frac{1}{2}$ d) $\frac{1}{2\sqrt{3}}$
 e) $-\frac{1}{2}$ f) $-\frac{1}{2}$

5. Evaluate.

a) $\lim_{x \rightarrow 4} \frac{x - 4}{\sqrt{x} - 2}$ b) $\lim_{x \rightarrow 1} \frac{\sqrt{x} - x}{x - 1}$
 c) $\lim_{x \rightarrow 2} \frac{\sqrt{6 - x} - 2}{\sqrt{3 - x} - 1}$ d) $\lim_{t \rightarrow 0} \frac{\sqrt{3 + t} - \sqrt{3}}{t}$
 e) $\lim_{x \rightarrow 1} \frac{\frac{1}{\sqrt{x}} - 1}{x - 1}$ f) $\lim_{t \rightarrow 0} \left(\frac{1}{t\sqrt{1+t}} - \frac{1}{t} \right)$

a) 12 b) 3
 c) $\frac{3}{2}$

6. Evaluate.

a) $\lim_{x \rightarrow 8} \frac{x - 8}{\sqrt[3]{x} - 2}$ b) $\lim_{x \rightarrow 4} \frac{x^{3/2} - 8}{x - 4}$
 c) $\lim_{x \rightarrow 1} \frac{\sqrt{x} - 1}{\sqrt[3]{x} - 1}$