

## SECTION 2.2

2.2.1 Find  $\lim_{x \rightarrow -2} (x^3 + 6x^2 - 16)$ .

2.2.3 Find  $\lim_{x \rightarrow 4} \frac{x^2 + 9}{x^2 - 1}$ .

2.2.5 Find  $\lim_{x \rightarrow 0} \frac{x^2 + 2x}{x - 2x^2}$ .

2.2.7 Find  $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x^2 - 4x + 3}$ .

2.2.9 Find  $\lim_{x \rightarrow 3} \frac{x^3 - 27}{x - 3}$ .

2.2.11 Find  $\lim_{h \rightarrow 2} \frac{h^3 - 4h}{h^3 - 2h^2}$ .

2.2.13 Find  $\lim_{h \rightarrow 0} \frac{\frac{1}{3+h} - \frac{1}{3}}{h}$ .

2.2.15 Find  $\lim_{x \rightarrow 3} \frac{x - 3}{x^3 - 27}$ .

2.2.17 Find  $\lim_{h \rightarrow 1} \frac{|h - 2| - 2}{h}$ .

2.2.19 Find  $\lim_{x \rightarrow 1^+} \frac{x - 1}{|x - 1|}$ .

2.2.21 Find  $\lim_{x \rightarrow +\infty} \frac{x^3 + 2x}{3x^3 + 4x^2 + 5x}$ .

2.2.23 Find  $\lim_{x \rightarrow +\infty} \frac{\sqrt{3x^2 + 4x - 1}}{3 - x}$ .

2.2.25 Find  $\lim_{x \rightarrow -\infty} \frac{\sqrt{3x^2 + 4x - 1}}{3 - x}$ .

2.2.26 Find  $\lim_{x \rightarrow 3^-} f(x)$  where  $f(x) = \begin{cases} \frac{|x - 3|}{x - 3}, & x < 3 \\ x, & x > 3 \end{cases}$ .

2.2.27 Find  $\lim_{x \rightarrow 1} f(x)$  where  $f(x) = \begin{cases} \frac{1}{x + 2}, & x < 1 \\ 1 - 2x, & x > 1 \end{cases}$ .

2.2.2 Find  $\lim_{x \rightarrow 0} \pi^2$ .

2.2.4 Find  $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x^2 + x - 20}$ .

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

2.2.8 Find  $\lim_{x \rightarrow a} \frac{x^2 - a^2}{x - a}$ .

2.2.10 Find  $\lim_{x \rightarrow 1} \frac{x^3 - 3x^2 + 2x}{x - 1}$ .

2.2.12 Find  $\lim_{x \rightarrow a} \frac{\frac{1}{x} - \frac{1}{a}}{x - a}$ .

2.2.14 Find  $\lim_{x \rightarrow -a} \frac{x^3 + a^3}{x + a}$ .

2.2.16 Find  $\lim_{x \rightarrow 2} \frac{1 - \frac{4}{x^2}}{1 - \frac{2}{x}}$ .

2.2.18 Find  $\lim_{x \rightarrow 4^-} \frac{x - 4}{|x - 4|}$ .

2.2.20 Find  $\lim_{x \rightarrow +\infty} \frac{2x^2 - 1}{x^2 + 1}$ .

2.2.22 Find  $\lim_{x \rightarrow +\infty} \frac{\sqrt{x^2 - 4}}{2x}$ .

2.2.24 Find  $\lim_{x \rightarrow -\infty} \frac{\sqrt{x^2 - 4}}{x}$ .

Questions, Section 2.2

2.2.28 Find the right hand limit at  $x = 1$  for  $f(x) = \begin{cases} 1 - x, & x > 1 \\ 6, & x = 1 \\ 1 + x, & x < 1 \end{cases}$ .

2.2.29 Find the left hand limit at  $x = 0$  for  $f(x) = \begin{cases} x^3 - 1, & x \geq 0 \\ x + 1, & x < 0 \end{cases}$ .

2.2.30 Find  $\lim_{x \rightarrow 3} f(x)$  where  $f(x) = \begin{cases} x^2 - 1, & x < 3 \\ (x - 1)^3, & x > 3 \end{cases}$ .