

Worksheet - Algebraic Approach to Limits

1. Determine the limits for each of the following:

(a) $\lim_{x \rightarrow 9} \frac{9-x}{3-\sqrt{x}}$

(b) $\lim_{x \rightarrow -2} \frac{x^3+8}{x+2}$

(c) $\lim_{x \rightarrow 2} \frac{x^4-16}{x-2}$

(d) $\lim_{x \rightarrow 9} \frac{x^2-81}{3x-27}$

(e) $\lim_{x \rightarrow -3} \frac{x+3}{x^2-x-12}$

(f) $\lim_{x \rightarrow -8} \frac{x+8}{\sqrt[3]{x}+2}$

(g) $\lim_{x \rightarrow -2} \frac{x^3 - x^2 - x + 10}{x^2 + 3x + 2}$

(h) $\lim_{x \rightarrow 25} \frac{x-25}{\sqrt{x}-5}$

(i) $\lim_{x \rightarrow -27} \frac{x+27}{3+\sqrt[3]{x}}$

(j) $\lim_{h \rightarrow 0} \frac{(h-5)^2-25}{h}$

(k) $\lim_{a \rightarrow 1} \frac{a^3-a}{a^2-1}$

(l) $\lim_{x \rightarrow -2} \frac{x+2}{x^2-x-6}$

(m) $\lim_{a \rightarrow 9} \frac{a-9}{3-\sqrt{a}}$

(n) $\lim_{a \rightarrow 0} \frac{\sqrt{2-a}-\sqrt{2}}{a}$

(o) $\lim_{x \rightarrow 2} \frac{\frac{1}{x}-\frac{1}{2}}{x-2}$

(p) $\lim_{a \rightarrow 0} \frac{a}{\sqrt{1+3a}-1}$

Worksheet Answers

- 1a) 6
- b) 12
- c) 32
- d) 6
- e) $-\frac{1}{7}$
- f) 12
- g) -15
- h) 10
- i) 27
- j) -10
- k) 1
- l) $-\frac{1}{5}$
- m) -6
- n) $-\frac{\sqrt{2}}{4}$
- o) $-\frac{1}{4}$
- p) $\frac{2}{3}$