

W5 – Limits

MHF4U

Jensen

1) Evaluate each limit

a) $\lim_{x \rightarrow 2} \frac{3x}{x^2+2}$

b) $\lim_{x \rightarrow -1} (x^4 + x^3 + x^2)$

c) $\lim_{x \rightarrow 9} \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right)^2$

2) Evaluate the limit of each

a) $\lim_{x \rightarrow 2} \frac{4-x^2}{2-x}$

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

c) $\lim_{x \rightarrow 3} \frac{x^3-27}{x-3}$

d) $\lim_{x \rightarrow 4} \frac{16-x^2}{x^3+64}$

e) $\lim_{x \rightarrow 4} \frac{x^2-16}{x^2-5x+6}$

f) $\lim_{x \rightarrow -1} \frac{x^2+x}{x+1}$

3) Complete the following table and use results to estimate $\lim_{x \rightarrow 2} \frac{x-2}{x^2-x-2}$

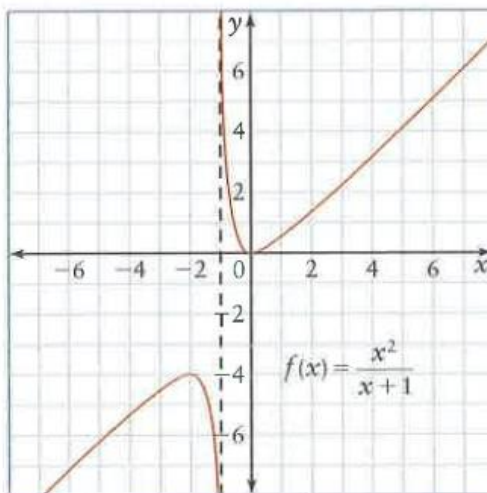
x	1.9	1.99	1.999	2.001	2.01	2.1
$\frac{x-2}{x^2-x-2}$						

4) Use the graph to find the following limits:

a) $\lim_{x \rightarrow -1^+} \frac{x^2}{x+1}$

b) $\lim_{x \rightarrow -1^-} \frac{x^2}{x+1}$

c) $\lim_{x \rightarrow -1} \frac{x^2}{x+1}$



5) Use the graph to determine the following limits

a) $\lim_{x \rightarrow -1^+} h(x)$

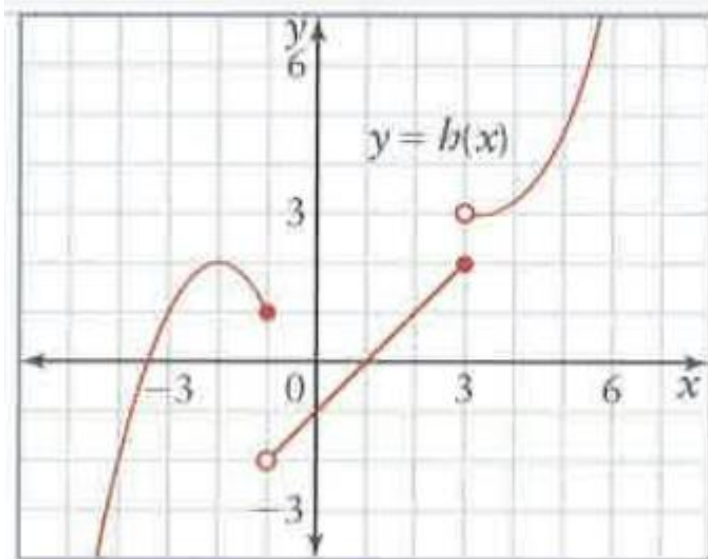
b) $\lim_{x \rightarrow -1^-} h(x)$

c) $\lim_{x \rightarrow -1} h(x)$

d) $\lim_{x \rightarrow 3^+} h(x)$

e) $\lim_{x \rightarrow 3^-} h(x)$

f) $\lim_{x \rightarrow 3} h(x)$



Answer Key

1)a) 1 b) 1 c) $\frac{100}{9}$ 2)a) 4 b) 1 c) 27 d) 0 e) 0 f) -1 3) $\frac{1}{3}$ 4)a) ∞ b) $-\infty$ c) does not exist
 5)a) -2 b) 1 c) does not exist d) 3 e) 2 f) does not exist