

Evaluating Limits Numerically

Find the limit, if it exists, for each of the following. If it does not exist, explain why.

1. $\lim_{x \rightarrow -1} \frac{x^2 - 1}{x + 1} = -2$

x-values	y-values
-1.1	-2.1
-1.01	-2.01
-1.001	-2.001
-1.0001	-2.0001
-1.00001	-2.00001
-.99999	-1.99999
-.9999	-1.9999
-.999	-1.999
-.99	-1.99
-.9	-1.9

← -2.0

2. $\lim_{x \rightarrow 1} \frac{x^2 - 2}{x - 1} = 0$

x-values	y-values
.9	-.1
.99	-.01
.999	-.001
.9999	-1×10^{-4}
.99999	-1×10^{-5}
1.00001	1×10^{-5}
1.0001	1×10^{-4}
1.001	.001
1.01	.01
1.1	.1

- .00001 ← 0
.00001 ← 0

3. $\lim_{x \rightarrow 0} \frac{2^x - 1}{x} = .693$

x-values	y-values
-.1	.66967
-.01	.69075
-.001	.69291
-.0001	.69312
-.00001	.69314
.00001	.69315
.0001	.69317
.001	.69339
.01	.69556
.1	.71773

← .69315

4. $\lim_{x \rightarrow 2} \frac{\sqrt{5x^2 - 15}}{x^3} =$

x-values	y-values
1.9	.25462
1.99	.27803
1.999	.27937
1.9999	.27949
1.99999	.27951
2.00001	.27951
2.0001	.27952
2.001	.27965
2.01	.28082
2.1	.28671

← .27951

5. $\lim_{x \rightarrow 0} \frac{\sqrt{x+4} - 2}{x} =$

x-values	y-values
-.1	.25158
-.01	.25016
-.001	.25002
-.0001	.25
-.00001	.25
.00001	.25
.0001	.25
.001	.24998
.01	.24984
.1	.24846

← .25