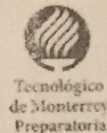


HOMEWORK: Limits

By: Lucy Solis



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57/02

Link: <http://www.rootmath.org/calculus/estimating-limits-numerically>

I. Instructions: Estimate the given limit using a numerical approximation

1. Use the table to approximate $\lim_{x \rightarrow -3} \frac{x+3}{2x^2-18} = 0.08$ (replace)

x	-3.1	-3.01	-3.001	-3	-2.999	-2.99	-2.9
f(x)	-0.0819	-0.0831	-0.0833	undef.	-0.0833	-0.0833	-0.0844

2. Use the table to approximate $\lim_{h \rightarrow 0} \frac{(5+h)^2 - 25}{h} = 10$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	9.9	9.99	9.999	undef.	10.001	10.01	10.1

3. $\lim_{x \rightarrow 0} \frac{\sin(x)}{x} = 0.1745$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	0.1745	0.1745	0.1745	undef.	0.174	0.174	0.174

4. $\lim_{x \rightarrow 0} \frac{\sqrt{x+1}-1}{x} = 0.50$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	0.5131	0.5012	0.5001	undef.	0.4998	0.4987	0.4880

5. Find $\lim_{x \rightarrow 0} f(x)$ if $f(x) = \begin{cases} x-1 & x < 0 \\ x^2 & x \geq 0 \end{cases} = \emptyset \times \text{D.N.E.} - \frac{1}{2}$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	-1.1	-1.01	-1.001	0	0.000001	0.0001	0.01

6. Find $\lim_{x \rightarrow 2} \frac{x+1}{x-2} = \pm 3000$

x	1.9	1.99	1.999	2	2.001	2.01	2.1
f(x)	-29	-299	-2999	undef.	3001	301	31

7. Find $\lim_{x \rightarrow 1} \frac{x^2}{(x-1)^2} = 1'000'000$

x	0.9	0.99	0.999	1	1.001	1.01	1.1
f(x)	71	9801	998'001	undef.	1'002'001	10'201	121

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