

Objective: Estimate a limit using a numerical or graphical approach.

Complete the following table and numerically estimate $\lim_{x \rightarrow 4} \frac{1}{2}x^2 - 2x + 3$.

x	3.9	3.99	3.999	4	4.001	4.01	4.1
f(x)				?			

Check your answer by using the graphing calculator.

ANSWER:

x	3.9	3.99	3.999	4	4.001	4.01	4.1
f(x)	2.805	2.98005	2.998005	3	3.002005	3.02005	3.205

The table illustrates that the function is approaching 3 as the “x” values of the function approach 4.

Therefore, the $\lim_{x \rightarrow 4} \frac{1}{2}x^2 - 2x + 3 = 3$. Also, if the function is graphed on a graphing calculator, it is easy to see that the function approaches 3 as the “x” values approach 4 from both sides. (Use the trace function.)