

Theory of Limits

Sometimes we can't work something out directly ... but we can see what it should be as we get closer and closer

ex find $f(1)$ for $f(x) = \frac{x^2-1}{x-1}$

Solution Sub 1 in the eq

$$f(1) = \frac{1^2-1}{1-1} = \frac{0}{0}$$

$\frac{0}{0}$ is undetermined, we don't know that value. So we need another way to know to answer that. Let's try approaching closer and closer to $x=1$

x	$\frac{x^2-1}{x-1}$
0.5	1.5
0.9	1.9
0.99	1.99
0.999	1.999
0.9999	1.9999
...	...

Now, we can see that as x get closer to 1, then $\frac{x^2-1}{x-1}$ get close to 2

Chapter Two

Limits

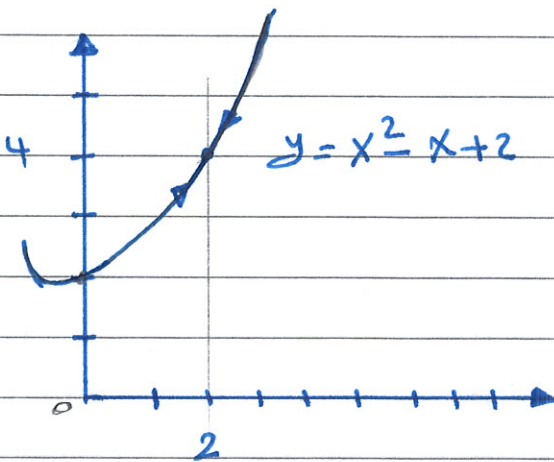
$$\lim_{x \rightarrow 2} (x^2 - x + 2)$$

تضيء فنية الدالة فنزوما نقرّب من (2) (x=2). وذا يباد فنية الدالة

عند (x) صيغة نيم تعويض فنية (x) بترك الأصح الدالة (0/0)

او $\frac{\infty}{0}$ او $\frac{\infty}{\infty}$.

$$\lim_{x \rightarrow 2} 2^2 - 2 + 2 = 4$$



AS x approaches 2,

Properties of limits

$$\textcircled{1} \lim_{x \rightarrow a} C = C$$

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$$\textcircled{2} \lim_{x \rightarrow a} x = a$$