

Precise Definition of a Limit

C. Prove: $\lim_{x \rightarrow 4} (3x - 2) = 10$ (Divide your answer into three parts.)

1. State the Definition:

The statement _____ means:

_____ $\varepsilon > 0$, _____ $\delta > 0$ _____

_____ $0 < |x - 4| < \delta$ _____ $|(3x - 2) - 10| < \varepsilon$.

2. Scratch Work to Find δ : (Start with the ε -inequality and manipulate it into the δ -inequality.)

Start with the ε -inequality:

Simplify the quantity inside the absolute values:

. _____

Divide both sides by the coefficient of x :

Identify δ :

$\delta =$ _____

3. Proof: (Reverse the steps from your scratch work.)

Given $\varepsilon > 0$, let $\delta =$ _____

Consequently, if _____,

then _____,

or _____