Name: _____ Section: _____

Precise Definition of a Limit

D. Prove: $\lim_{x\to 3}(12 - 2x) = 6$ (Divide your answer into three parts.)

1. State the Definition:

The statement _____ means:

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

_____ $0 < |x - 3| < \delta$ _____ $|(12 - 2x) - 6| < \varepsilon$.

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:

. _____

Reverse the sign of the quantity inside the absolute values so the coefficient of x is positive:

_____

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 _____

or _____