The Mean Value Theorem:

Given the function f which is continuous on the closed interval $[a, b]$ and differentiable on the open interval (a, b), then there exists at least one number c in (a, b) such that:

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

In order to "verify" the Mean Value Theorem, for a given function $f(x)$, and given endpoints a and b, do the following:

Step 1: Sub a into the given function and b into the given function in order to compute $f(a)$ and $f(b)$, respectively.

Step 2: Now you can compute the right-hand side of the Mean Value Theorem: $\frac{f(b) - f(a)}{b - a}$

Step 3: Compute the derivative of the function, $f'(x)$.

Step 4: Sub c in place of x in $f'(x)$ (literally replace all the x's with c in the derivative).

Step 5: Set $f'(c)$, your answer in Step 4, equal to $\frac{f(b) - f(a)}{b - a}$, your answer in Step 2. Solve for c.

Step 6: If you get more than one answer for c, only keep the solutions that lie between a and b (not including a and b themselves). The Mean Value Theorem predicts there will be at least one c in (a, b), so you must get at one least answer for c that falls between a and b. If you do get at least one answer for c, you have verified the Mean Value Theorem.