1125-11-945 **Martin Burke*** (martin31113@gmail.com). *A Short Proof of Fermat's Last Theorem, $x < z$ and $y < z$*

x, y and z are integers > 0 and $n > 2$. For $x^2 + y^2 = z^2$, if x = z, or y = z, or x and y = z, then $x^2 + y^2 > z^2$. So $x < z$ and $y < z$.

Considering $x^3 + y^3 = z^3$, $x^2 x + y^2 y = z^2 z$, the individual terms x, y and z act like constants that multiply the x^2, y^2, and z^2 terms. For example $3^2 + 4^2 = 5^2$ and $3^2 * 2 + 4^2 * 2 = 5^2 * 2$.

However $x < z$ and $y < z$, and multiplication by the individual x, y and z terms causes an inequality in $x^3 + y^3 = z^3$. So $x^3 + y^3 \neq z^3$.

Similarly $x^4 + y^4 = z^4$, $x^2 x^2 + y^2 y^2 \neq z^2 z^2$. Considering $x^2 x^{n-2} + y^2 y^{n-2} = z^2 z^{n-2}$, x^{n-2}, y^{n-2}, and z^{n-2} multiply x^2, y^2, and z^2.

However $x < z$ and $y < z$. Therefore $x^{n-2} < z^{n-2}$ and $y^{n-2} < z^{n-2}$.

Multiplication by the individual x^{n-2}, y^{n-2}, and z^{n-2} terms causes an inequality in $x^n + y^n = z^n$.

$x^n + y^n \neq z^n$ QED.

The proof for $x^2 + y^2 <> z^2$ will also be presented. (Received September 13, 2016)