The great Theorem of Pierre de Fermat as a special case abc conjecture and the proof of Andrew Beal hypothesis. Part 2.

Of course Mr. Pierre de Fermat did not know the ABC hypothesis, let alone hypothesis Taniyama-Shimura. He simply wrote that there is no solution in integers $x^n + y^n = z^n$ if n $\succ 2$

He understood the essence of the proof, but did not even begin to uncover it, assuming it is elementary. It even went as far that some asserted that Mr. Pierre de Fermat had been mistaken in the simplicity of the theorem. Some even say that it is impossible to prove the Great Theorem. Those are very brave and self-confident allegations.

However Mr. Fermat was a genius and that which seemed impossible to some, to him was obvious and simple. So how could he have realized how it looks like in one moment?

Perhaps like this:

$$x^n + y^n = z^n$$

a) $\sqrt{x^n} = \sqrt{z^n - y^n}$ if $n \succ 2 \Rightarrow \sqrt{x^n} = x\sqrt{x^{n-2}}$

$\sqrt{y^n} = \sqrt{z^n - x^n}$ if $n \succ 2 \Rightarrow \sqrt{y^n} = y\sqrt{y^{n-2}}$

$\sqrt{z^n} = \sqrt{x^n + y^n}$ if $n \succ 2 \Rightarrow \sqrt{z^n} = z\sqrt{z^{n-2}}$

b) $\dfrac{x\sqrt{x^{n-2}}}{y\sqrt{y^{n-2}}} = \dfrac{\sqrt{z^n - y^n}}{\sqrt{z^n - x^n}} \Rightarrow \dfrac{x}{y} = \dfrac{\sqrt{y^{n-2}}\sqrt{z^n - y^n}}{\sqrt{x^{n-2}}\sqrt{z^n - x^n}}$

c) $\dfrac{x\sqrt{x^{n-2}}}{z\sqrt{z^{n-2}}} = \dfrac{\sqrt{z^n - y^n}}{\sqrt{y^n + x^n}} \Rightarrow \dfrac{x}{z} = \dfrac{\sqrt{z^{n-2}}\sqrt{z^n - y^n}}{\sqrt{x^{n-2}}\sqrt{y^n + x^n}}$

d) $(\sqrt{z^n})^2 = (\sqrt{x^n})^2 + (\sqrt{y^n})^2 \Rightarrow \dfrac{\sqrt{x^n}}{\sqrt{z^n}} = \cos\beta$

$$\frac{x}{z} = \frac{\sqrt{z^{n-2}}\sqrt{z^n - y^n}}{\sqrt{x^{n-2}}\sqrt{y^n + x^n}} = \frac{\sqrt{z^{n-2}}}{\sqrt{x^{n-2}}}\cos\beta \Rightarrow$$

$$kz = \sqrt{x^{n-2}}, \Rightarrow k = \frac{\sqrt{x^{n-2}}}{z}, (x,z) = 1 \Rightarrow k \notin N \Rightarrow z = \sqrt{x^{n-2}}, but (x,z) = 1 \Rightarrow Q.E.D.$$

$and:$

$$kx = \sqrt{z^{n-2}}\cos\beta \Rightarrow k = \frac{\sqrt{z^{n-2}}\sqrt{x^n}}{x\sqrt{z^n}} \Rightarrow \frac{\sqrt{x^{x-2}}}{z} = \frac{\sqrt{z^{n-2}}\sqrt{x^n}}{x\sqrt{z^n}}, \sqrt{x^{n-2}} \prec \sqrt{z^{n-2}}\sqrt{x^n} \Rightarrow$$

$$\sqrt{z^{n-2}}\sqrt{x^n} = K\sqrt{x^{n-2}} \Rightarrow K = \frac{\sqrt{z^{n-2}}\sqrt{x^n}}{\sqrt{x^{n-2}}} = \frac{\sqrt{z^{n-2}}}{x} \notin N \Rightarrow K = 1$$

but

$(x,z)=1 \Rightarrow Q..E..D.$

$and:$

$$x\sqrt{z^n} = Kz \Rightarrow K = \frac{x\sqrt{z^n}}{z} \Rightarrow \frac{x\sqrt{z^n}}{z} = \frac{\sqrt{z^{n-2}}}{x} \Rightarrow x^2\sqrt{z^{n-2}} = \sqrt{z^{n-2}} \Rightarrow x^2 = 1$$

but

$x \succ 1 \Rightarrow K = 1$

AND:

If $K = 1 \Rightarrow \sqrt{z^{n-2}}\sqrt{x^n} = \sqrt{x^{n-2}} \Rightarrow \frac{\sqrt{z^n}}{z} = \frac{\sqrt{x^{n-2}}}{\sqrt{x^n}} \prec 1 \Rightarrow \frac{\sqrt{z^n}}{z} \prec 1,$

But $n \succ 2$

Q.E.D.

I am convinced that there can be still be many ways found how to define the relationship between x, y and z, proving that Mr. Fermat is correct.
Also Andrew Beal’s hypothesis cannot be forgotten, his genius statement cannot be left without awe. How he managed to do it I cannot comprehend – beautifully and with elegance! This proof confirms that Andrew Beal’s hypothesis is true.

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