late Feb, 2007,

(1). Use A for ξ.

FLT 1 + 2.

~~Let~~ p be an odd prime and let x, y, z be relatively prime integers such that $x^p + y^p + z^p = 0$. ~~If~~ p divides xyz, let p divide z. Write

$$\xi^p = \left(\frac{y^p + z^p}{y+z}\right), \quad a^p = (y+z), \quad x = -a\xi, \quad y = a^p - z.$$

~~Let~~ $|a| > 1$ because can't have $|a| = |b| = 1$.

So $-a^p\xi^p + (a^p - z)^p + z^p = 0$. ξ & a are relprime

So $-a^p\xi^p + pa^pz^{(p-1)} \equiv 0 \pmod{a^{2p}}$.

$$\xi^p \equiv pz^{(p-1)} \pmod{a^p} \quad \text{------------ (1)}$$

Similarly, $\xi^p \equiv py^{(p-1)} \pmod{a^p}$ ------------ (2).

Actually, $2\xi^p \equiv py^{(p-1)} + pz^{(p-1)} \pmod{a^{2p}}$ ... (2).

---

(3) $x(y+z) = a^p$.

$$2(y^p + z^p) \equiv p(y^p + z^p + zy^{(p-1)} + yz^{(p-1)}) \pmod{a^{3p}},$$

------ (4)

$$0 \equiv (p-2)(y^p + z^p) + pyz(y^{(p-2)} + z^{(p-2)}) \pmod{a^{3p}}$$

$$0 \equiv (p-2)\left[p(y+z)z^{(p-1)} - \frac{p(p-1)}{2}(y+z)^2 z^{(p-2)}\right]$$

$$+ pyz\left[(p-2)(y+z)z^{(p-3)} - \frac{(p-2)(p-3)}{2}(y+z)^2 z^{(p-4)}\right] \quad (4)$$

$(1)\times z - (2)\times y$:

$z^p(z-y) \equiv p(z^p - y^p) \pmod{a^p}$, ----- (6).

÷ $(z-y)$: $z^p \equiv p(z^{(p-1)} + y^{(p-1)})$ ----- (5)

$+ pyz(z^{(p-3)} + yz^{(p-4)} + \dots + y^{(p-3)}) \pmod{a^p}$,

because a is relatively prime to $(z-y)$, seeing as it divides $(z+y)$.

(5) × 2 − (3) :

$0 \equiv p(z^{(p-1)} + y^{(p-1)}) + 2pyz(z^{(p-3)} + \dots + y^{(p-3)}) \pmod{a^p}$,

(3) × $(z-y)$ − (6) × 2 :

$0 \equiv -2p(z^p - y^p) + p(z-y)(z^{(p-1)} + y^{(p-1)}) \pmod{a^p}$,

Cancel, transpose and divide by p, relatively prime to a.

$(z^p - y^p) \equiv yz(z^{(p-2)} - y^{(p-2)}) \pmod{a^p}$.

÷ $(z-y)$:

$z^{(p-1)} + yz^{(p-2)} + y^2 z^{(p-3)} + \dots + y^{(p-1)}$

$\equiv yz^{(p-2)} + y^2 z^{(p-3)} + \dots + y^{(p-2)} z \pmod{a^p}$,

Cancel : $z^{(p-1)} + y^{(p-1)} \equiv 0 \pmod{a^p}$, $2z^p \equiv 0 \pmod{a^p}$,

a rel prime to z, Hence contradiction, [illegible]