

# Re: Bring Math Arguments against this FERMAT LAST THEOREM PROOF

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*Source:* <http://sci.tech-archive.net/Archive/sci.math/2005-08/msg05501.html>

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  - *Date:* Sun, 28 Aug 2005 13:55:46 EDT
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> On 28 Aug 2005 05:41:14 -0700,  
> matt271829-news@xxxxxxxxxxx wrote:  
>  
>>quasi wrote:  
>>> On 25 Aug 2005 14:52:20 -0700,  
> matt271829-news@xxxxxxxxxxx wrote:  
>>>  
>>>>  
>>>>george ghiata wrote:  
>>>>> OBSERVATION:  
>>>>> X,Y,Z relative Prime numbers  
>>>>> Let's say that  $X^3+Y^3=Z^3$   
>>>>> Let's take:  
>>>>>  $X+Y=W$   
>>>>> and  
>>>>>  $R=X^2-X*Y+Y^2=W^2-3*W*Y+3*Y^2=W^2-3*W*X+3*X^2$   
>>>>  
>>>>You mean  $R=X^2-X*Y+Y^2$ , but yeah, OK.  
>>>>  
>>>>>  
>>>>>> When Z is not divisible by 3 we see that  
>  $(X+Y)=W$   
>>>>>> and R do not have any common divisor .  
>>>>>  
>>  
>>[snip verbiage]  
>>  
>>>  
>>> Here is a proof of that part:  
>>>  
>>> Assume:  
>>>  
>>> (1) X,Y,Z are relatively prime  
>>> (2)  $X^3 + Y^3 = Z^3$   
>>> (3) Z is not a multiple of 3  
>>>  
>>> Then R,W are relatively prime, where  $R=X^2-X*Y+Y^2$   
> and  $W=X+Y$ .

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>>>  
>>> proof:  
>>>  
>>> Suppose instead that  $(R,W) > 1$ . Let  $p$  be a common  
> prime factor of  $R,W$ .  
>>>  
>>>  $p|W$  and  $W^3 = Z^3 - R^3 \Rightarrow p|Z^3 - R^3 \Rightarrow p|Z^3 - R^3$  [since  $Z$  is not  
> a multiple of  $3$ ]  
>>>  
>>>  $d|W^2 - R \Rightarrow d|3^2 X^2 Y \Rightarrow p|X^2 Y$  [since  $p \nmid 3$ ]  $\Rightarrow$   
>  $p|X$  or  $p|Y$ .  
>>>  
>>> I assume you mean  $p|W^2 - R \Rightarrow p|3^2 X^2 Y \Rightarrow p|X^2 Y$   
>>>  
>>> Without loss of generality, assume  $p|X$ . But then  
> since also  $p|Z$ , the  
>>> equation  $Y^3 = Z^3 - X^3$  implies  $p|Y^3$ , hence  $p|Y$ ,  
> contradicting the  
>>> assumption that  $X,Y,Z$  are relatively prime.  
>>>  
>>>  
>>>Great!  
>>>  
>>>Then  
>>>  
>>> $(R,W) = 1$  and  $R^3 + W^3 = Z^3 \Rightarrow R$  and  $W$  are perfect  
> cubes.  
>>>  
>>>So  $R = z^3$  and  $W = u^3$  for some integers  $z$  and  $u$ .  
>>>  
>>>And  
>>>  
>>> $Z^3 = R^3 + W^3 = z^3 + u^3$   
>>> $\Rightarrow Z = z + u$   
>>>  
>>>Continuing with GG's proposed proof:  
>>>  
>>>When  $Z$  is div