Warm up:

Simplify.

1) $4(3x - 5) = 12x - 20$

2) $3(2x + 7) = 6x + 21$

3) $-8(9x \underline{- 2}) = -72x + 16$

4) $5(x + 6) = 5x + 30$

HW Solutions

① $(-5,2)$ $(4,-2)$

$-5-4=-9 \rightarrow 9$

$2-(-2)=4$

$9^2+4^2=d^2$

$81+16$

$\sqrt{97}=\sqrt{d^2}$

$\sqrt{97}=d$

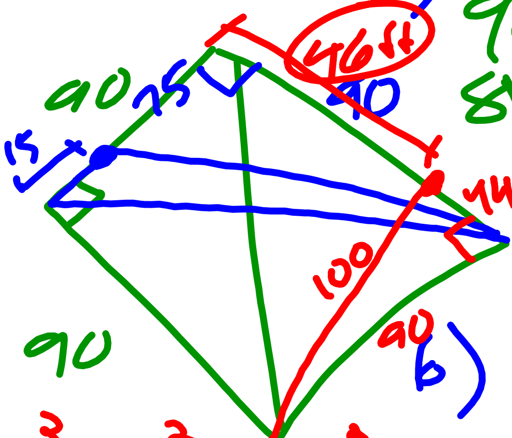
② (4, 8) (-3, -6)

$4-(-3)=7$ $\quad 7^2+14^2=d^2$

$8-(-6)=14$ $\quad 49+196$

$\sqrt{245}=\sqrt{d^2}$

$\sqrt{49.5}$ $\quad 7\sqrt{5}=d$



a) $90^2 + 90^2 = x^2$

$8100 + 8100$

$\sqrt{16200} = \sqrt{x^2}$

≈ 127 ft

b) $75^2 + 90^2 = x^2$

≈ 117 ft

c) $90^2 + x^2 = 100^2$

$8100 + x^2 = 10000$

$-8100 \qquad -8100$

$\sqrt{x^2} = \sqrt{1900}$

$x = 43.58898944$

$$(x + 5)(3x + 4)$$

$(x+5)(3x+4)$

$3x(x+5) + 4(x+5)$

$3x^2 + 15x + 4x + 20$

$3x^2 + 19x + 20$

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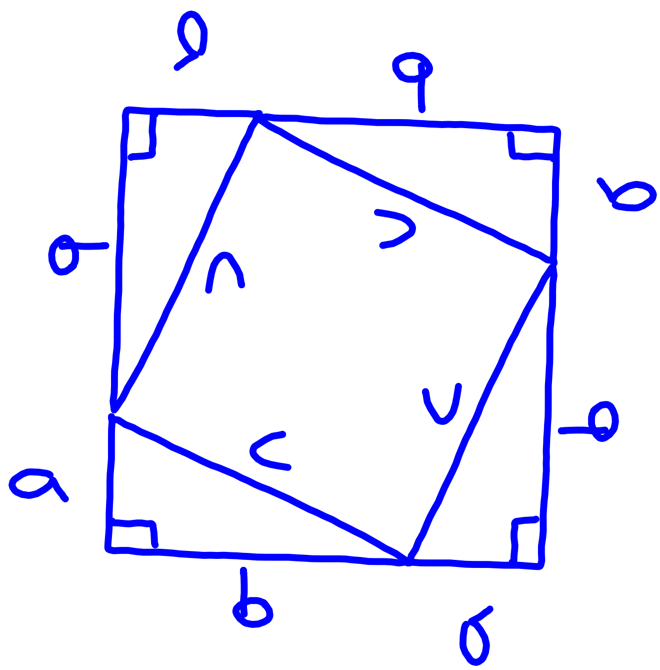
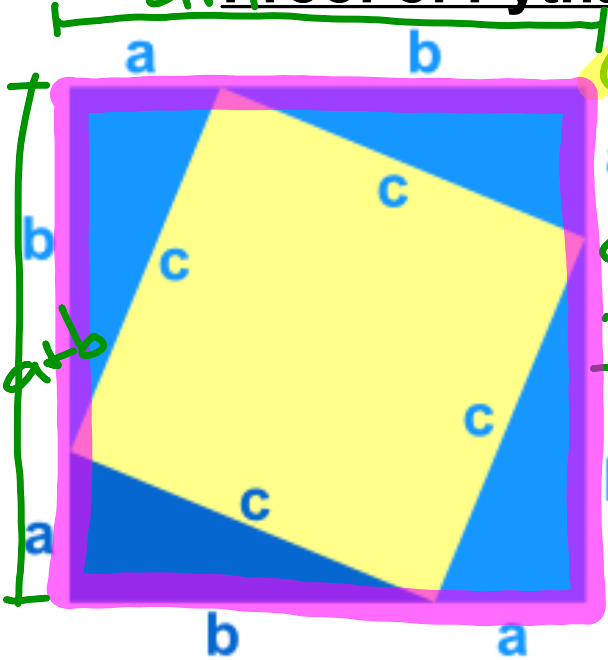


Proof of Pythagorean Theorem



$$(a+b)(a+b)=4\cdot\tfrac{1}{2}ab + c\cdot c$$

$$a^2+ab+ab+b^2 = 2ab + c^2$$

$$a^2+2ab+b^2 = 2ab+c^2$$

$$-2ab \qquad -2ab$$

$$a^2+b^2=c^2$$

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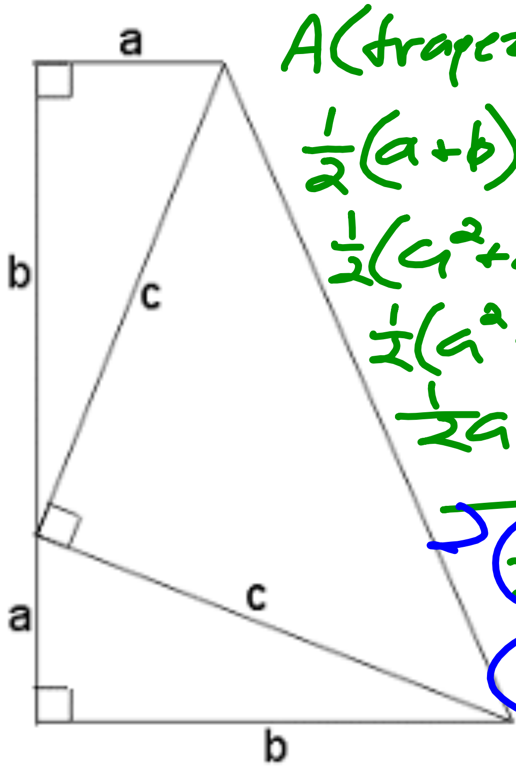
James Garfield's Proof



$$A(\text{trapezoid}) = \frac{1}{2}h(b_1 + b_2)$$

$$\frac{1}{2}(a+b)(a+b) = 2\cdot\frac{1}{2}ab + \frac{1}{2}\cdot c\cdot c$$

$$\frac{1}{2}(a^2+ab+ab+b^2) = ab + \frac{1}{2}c^2$$

$$\frac{1}{2}(a^2+2ab+b^2) = ab + \frac{1}{2}c^2$$

$$\frac{1}{2}a^2 + ab + \frac{1}{2}b^2 = ab + \frac{1}{2}c^2$$

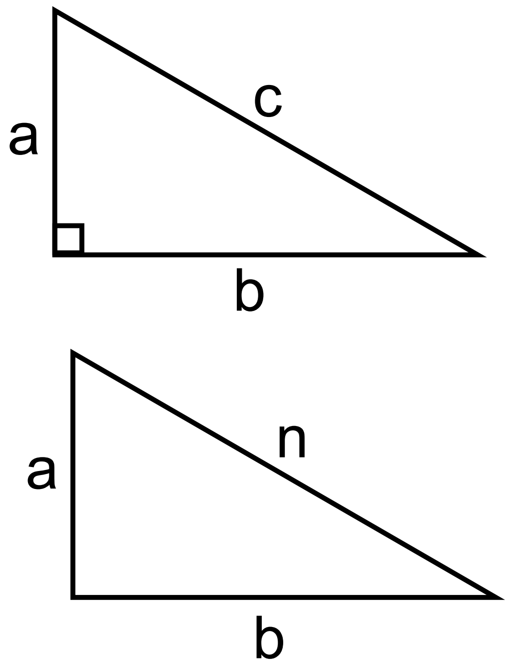
$$-ab \qquad -ab$$

$$2\left(\frac{1}{2}a^2 + \frac{1}{2}b^2\right) = \left(\frac{1}{2}c^2\right)2$$

$$a^2 + b^2 = c^2$$

Proof of the Converse of the Pythagorean Theorem

$a^2+b^2=c^2 \longrightarrow$



$a^2+b^2=c^2$

$a^2+b^2=n^2$

$c=n$ substitution

$a=a$
$b=b$
$c=n$

triangles are $\cong$ SSS

all $\angle$'s are $\cong$

it's a

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