December 1, 2017

#9) $\sqrt{147 m^3 n^3}$

$\sqrt{147} \cdot \sqrt{m^3} \cdot \sqrt{n^3}$

$\sqrt{49 \cdot 3} \cdot \sqrt{m^2 \cdot m^1} \cdot \sqrt{n^2 \cdot n^1}$

$\sqrt{49} \cdot \sqrt{3} \cdot \sqrt{m^2} \cdot \sqrt{m} \cdot \sqrt{n^2} \cdot \sqrt{n}$

$7\sqrt{3} \cdot m\sqrt{m} \cdot n\sqrt{n}$

$\boxed{7mn\sqrt{3mn}}$

Dec 1-9:49 AM

$\sqrt{45} = \sqrt{9 \cdot 5}$

$= \sqrt{9} \cdot \sqrt{5}$

$= \sqrt[2]{3^2}$

$= 3\sqrt{5}$

① $3\sqrt{5} = \sqrt{3^2 \cdot 5}$

$= \sqrt{9 \cdot 5}$

$= \sqrt{45}$ ✓

Dec 1-10:08 AM

$7\sqrt{5x} = \sqrt{7^2 \cdot 5x}$

$= \sqrt{49 \cdot 5x}$

$= \sqrt{245x}$

Dec 1-10:11 AM

Pythagorean Theorem

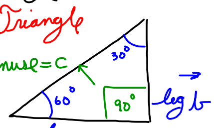
4000 BCE

Pythagoras

500 - 470 BC

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

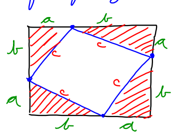
Right Triangle



→ $30° + 60° + 90° = 180°$

Dec 1-10:12 AM

Proof of Pythagorean Thm.



Recall:
* Area of a Rectangle:
$A = l \cdot w$
* Area of a triangle:
$\frac{1}{2} b \cdot h$

① Area of the large square:
$A = (a+b)(a+b) = (a+b)^2$
$= \boxed{a^2 + 2ab + b^2}$

② Area of 4 triangles:
$A = 4(\frac{1}{2}ab) = 2ab$

Area small square:
$A = c \cdot c = c^2$

$\boxed{c^2 + 2ab}$

Total Area:

$a^2 + 2ab + b^2 = c^2 + 2ab$
$-2ab \qquad -2ab$

$\boxed{a^2 + b^2 = c^2}$

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

Pythagorean Triples

$\boxed{3, 4, 5}$

$(3)^2 + (4)^2 = (5)^2$

$9 + 16 = 25$

$25 = 25$ ✓

$\boxed{5, 12, 13}$

$\boxed{7, 24, 25}$

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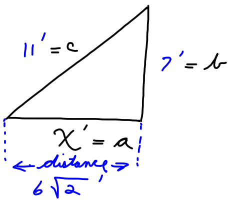


$a^2 + b^2 = c^2$

$(x)^2 + (7)^2 = (11)^2$

$x^2 + 49 = 121$

$\sqrt{x^2} = 72$

$x = \pm\sqrt{72}$

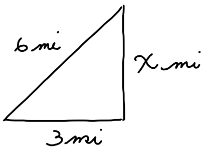
$x = \sqrt{72}$

$x = \sqrt{36 \cdot 2}$

$= \sqrt{36} \cdot \sqrt{2}$

$x = 6\sqrt{2}\,'$

Dec 1-10:36 AM



$(3)^2 + (x)^2 = (6)^2$

$9 + x^2 = 36$

$x^2 = 36 - 9$

$\sqrt{x^2} = \pm\sqrt{27}$

$x = \sqrt{27}$

$\boxed{x = 3\sqrt{3} \text{ mi}}$

Dec 1-10:41 AM

Do 8.1 & 8.2

Dec 1-10:44 AM