Scheduling Group Meetings

The Pythagorean Theorem: If a right triangle has legs of length a and b and its hypotenuse has length c, then $a^2 + b^2 = c^2$.

Dissection proof of the Pythagorean Theorem.

Example 12.16: Using the Pythagorean Theorem.
$\left(x^2 = 13^2 + 37^2 = 169 + 1369 = 1538, y^2 = 65^2 - 52^2 = 4225 - 2704 = 1521\right)$

Converse of the Pythagorean Theorem: If a triangle has sides of length a, b, and c, and $a^2 + b^2 = c^2$, then the triangle is a right triangle with hypotenuse of length c.

Example 12.18: Check if each of the following are right triangles:

- $15, 17, 8$ $\left(8^2 + 15^2 = 64 + 225 = 289 = 17^2\right)$
- $10, 5, 5\sqrt{3}$ $\left(5^2 + (5\sqrt{3})^2 = 25 + 75 = 100 = 10^2\right)$
- $5, 11, 12$ $\left(5^2 + 11^2 = 25 + 121 = 146 \neq 12^2\right)$

Class Discussion Problems:

1. $(2x)^2 + x^2 = 15^2, 5x^2 = 225, x^2 = 45, x = \sqrt{45}$
2. $8^2 + (7 + x)^2 = y^2, 8^2 + x^2 = 10^2, x = 6, 64 + 169 = y^2, y = \sqrt{233}$
3. $2^2 + 4^2 = x^2, x = \sqrt{20}, 3^2 + x^2 = y^2, y = \sqrt{29}$
4. $h^2 + 1^2 = 2^2, h = \sqrt{3}, A = \frac{1}{2}(2)(\sqrt{3}) = \sqrt{3}$

Definitions from 11.3 that may prove useful: Pyramid, Cone, Prism, Cylinder

Homework 7 (due 4/6/10):

- Section 12.3 # 2ac, 3, 4ab, 5, 6, 9, 32
- Section 12.4 # 2b, 3c, 4d, 5d, 6ab, 19a, 23