

## Topic 25: Pythagorean Theorem Part 2

Is the following Triangle a Right Triangle?

1) Sides of 3, 4, 5

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

$$9 + 16 = 25$$

$$25 = 25$$

YES, it is a right  $\Delta$

2) Sides of 4, 5, 6

$$4^2 + 5^2 = 6^2$$

$$16 + 25 = 36$$

$$41 \neq 36$$

NO, it is NOT a right  $\Delta$ .

3) Sides of  $\sqrt{2}$ , 3,  $\sqrt{11}$ 

$$\sqrt{2}^2 + 3^2 = \sqrt{11}^2$$

$$2 + 9 = 11$$

$$11 = 11$$

Yes

4) Sides of  $\sqrt{3}$ , 4,  $\sqrt{17}$ 

$$\sqrt{3}^2 + 4^2 = \sqrt{17}^2$$

$$3 + 16 = 17$$

$$19 \neq 17$$

NO

5) Sides of  $\sqrt{5}$ , 7,  $3\sqrt{6}$ 

$$\sqrt{5}^2 + 7^2 = (3\sqrt{6})^2$$

$$5 + 49 = 3 \cdot 3 \cdot \sqrt{6} \cdot \sqrt{6}$$

$$54 = 9 \cdot 6$$

$$54 = 54$$

yes

6) Sides of  $\sqrt{5}$ ,  $\sqrt{7}$ ,  $\sqrt{12}$ 

$$\sqrt{5}^2 + \sqrt{7}^2 = \sqrt{12}^2$$

$$5 + 7 = 12$$

$$12 = 12$$

Yes

7) Sides of 9, 12, 15

$$9^2 + 12^2 = 15^2$$

$$81 + 144 = 225$$

$$225 = 225$$

yes

8) Sides of 1, 2, 3

$$1^2 + 2^2 = 3^2$$

$$1 + 4 = 9$$

$$5 \neq 9$$

NO

9) Sides of 7, 7,  $7\sqrt{2}$ 

$$7^2 + 7^2 = (7\sqrt{2})^2$$

$$49 + 49 = 7^2 \sqrt{2}^2 \quad (\text{NOTE: } 45/45/90)$$

$$98 = 49 \cdot 2$$

$$98 = 98$$

yes

10) Sides of 4, 8,  $4\sqrt{5}$ 

$$4^2 + 8^2 = (4\sqrt{5})^2$$

$$16 + 64 = 4^2 \sqrt{5}^2$$

$$80 = 16 \cdot 5$$

$$80 = 80$$

yes

11) Sides of 5, 11,  $2\sqrt{72}$ 

$$5^2 + 11^2 = (2\sqrt{72})^2$$

$$25 + 121 = 2^2 \sqrt{72}^2$$

$$146 = 4 \cdot 72$$

$$146 = 288 \quad \text{NO}$$