Squares and Square Roots Ex 3.2 Q7

Answer :

Only (i), (ii), (iv) and (v) are Pythagorean triplets.
A triplet (a, b, c) is called Pythagorean if the sum of the squares of the two smallest numbers is equal to the square of the biggest number.

(i) The two smallest numbers are 8 and 15. The sum of their squares is:
$8^2 + 15^2 = 289 = 17^2$
Hence, (8, 15, 17) is a Pythagorean triplet.

(ii) The two smallest numbers are 18 and 80. The sum of their squares is:
$18^2 + 80^2 = 6724 = 82^2$
Hence, (18, 80, 82) is a Pythagorean triplet.

(iii) The two smallest numbers are 14 and 48. The sum of their squares is:
$14^2 + 48^2 = 2500$, which is not equal to $51^2 = 2601$
Hence, (14, 48, 51) is not a Pythagorean triplet.

(iv) The two smallest numbers are 10 and 24. The sum of their squares is:
$10^2 + 24^2 = 676 = 26^2$
Hence, (10, 24, 26) is a Pythagorean triplet.

(v) The two smallest numbers are 16 and 63. The sum of their squares is:
$16^2 + 63^2 = 4225 = 65^2$
Hence, (16, 63, 65) is a Pythagorean triplet.

(vi) The two smallest numbers are 12 and 35. The sum of their squares is:
$12^2 + 35^2 = 1369$, which is not equal to $38^2 = 1444$
Hence, (12, 35, 38) is not a Pythagorean triplet.

Squares and Square Roots Ex 3.2 Q8

Answer :

The RHS of the three equalities is a fraction whose numerator is the multiplication of three consecutive numbers and whose denominator is 3.
If the biggest number (factor) on the LHS is 3, the multiplication of the three numbers on the RHS begins with 2.
If the biggest number (factor) on the LHS is 4, the multiplication of the three numbers on the RHS begins with 3.
If the biggest number (factor) on the LHS is 5, the multiplication of the three numbers on the RHS begins with 4.
Using this pattern, (1 x 2) + (2 x 3) + (3 x 4) + (4 x 5) + (5 x 6) has 6 as the biggest number. Hence, the multiplication of the three numbers on the RHS will begin with 5. Finally, we have:

$$1 \times 2 + 2 \times 3 + 3 \times 4 + 4 \times 5 + 5 \times 6 = \frac{5 \times 6 \times 7}{3} = 70$$

********** END **********