Triangles Ex 4.7 Q28

Answer :

Let

$A = (a-1)$

$B = \sqrt{2a}$

$C = (a+1)$

Larger side is $C = (a+1)$

We know that any number plus 1 is always greater than that number minus 1 and product of 2 and its square root.

For example : If a = 36

$a - 1 = 35$

$a + 1 = 37$

$\sqrt{2a} = 12$

If a = 5

$a - 1 = 4$

$a + 1 = 6$

$\sqrt{2a} = 4.47$

In order to prove that the given sides forms a right angled triangle we have to prove that

$A^2 + B^2 = C^2$.

Let us solve the left hand side first.

$$A^2 + B^2 = (a-1)^2 + \left(\sqrt{2a}\right)^2$$
$$= a^2 - 2a + 1 + 4a$$
$$= a^2 + 2a + 1$$

Now we will simplify the right hand side as shown below,

$$C^2 = (a+1)^2$$
$$= a^2 + 2a + 1$$

We can see that left hand side is equal to right hand side.

Therefore, the given sides determined the right angled triangle.

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