Triangles Ex 4.7 Q28

Answer :

Let

$A=(a-1)$

$B=\sqrt{2}a$

$C=(a+1)$

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

$a-1=35$

$a+1=37$

$\sqrt{2}a=12$

If a = 5

$a-1=4$

$a+1=6$

$\sqrt{2}a=4.47$

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.

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

$$=a^2-2a+1+4a$$

$$=a^2+2a+1$$

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 **********