

$$= \frac{49 - 32 + 16}{\sqrt{9}} - 5$$

$$= \frac{33}{3} - 5$$

Thus,  $BC = 6 \text{ cm}$

ii) Area<sub>AEIG</sub> =  $A_1 = \text{length} \times \text{width}$   
 $= AE \times AG$   
 $= x(x+1)(x+1)$   
 $= 4(x+1)^2$

$2AE = 8(x+1)$  (given)

$AG = (x+1)$  (given)

H belongs to [BC] (given)

$BH = AG$  (opp. sides of a rectangle)

Then  $HC = BC - BH$   
 $= 6 - (x+1)$   
 $= 5 - x$

Area<sub>IHCF</sub> =  $A_2 = \text{length} \times \text{width}$   
 $= IH \times HC$   
 $= 8(x+1)(5-x)$

iii)  $A_1 = A_2$  (given)

So,  $4(x+1)^2 = 8(x+1)(5-x)$

$4(x+1)^2 = 8(x+1)(5-x) = 0$

$4(x+1)^2 + 8(x+1)(x-5) = 0$

The above eqn is equivalent to  $E(x) = 0$

So,  $12(x+1)(x-3) = 0$

If the product of 2 factors is zero then at least one of them is zero

So  $x+1 = 0$  or  $x-3 = 0$

hence  $x = -1$  or  $x = 3$  but  $-1 < x < 5$  (given)

Thus,  $x = -1$  is rejected, and areas are equal if  $x = 3 \text{ cm}$