3rd exercise 1) ~~AB~~ In $\triangle ABC$ we have:
ABCD is a rectangle (given)
So, $C\hat{B}A = 90^\circ$ (angle formed by adj. sides of a rect)
& $B\hat{A}C = 30^\circ$ (given)
hence, $\triangle ABC$ is semi equilateral of hyp $[AC]$.

Thus, $AB = \frac{\sqrt{3}}{2}$ hyp (side facing 60°)
$= \frac{\sqrt{3}}{2} AC$
$= \sqrt{3}\left(\frac{4\sqrt{3}}{2}\right)/2$
$\boxed{AB = \frac{12}{2} cm} = 6 cm$

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$BC = \frac{1}{2}$ hyp | $BC = 2\sqrt{3}$ cm
$= \frac{1}{2} AC$

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But, $AD = BC$ opp. sides of a rect
Thus, $BC = AB = 2\sqrt{3}$ ~~cm~~

2) In $\triangle EFB$ we have:
a) $E\hat{B}F = 90^\circ$ (~~ang~~ proved)
So, $\triangle EFB$ is right at B.

$(EB)^2 = \left(\frac{\sqrt{6}+\sqrt{2}}{2}\right)^2$

$EB^2 = \frac{6+4\sqrt{3}+2}{4}$

$= \frac{8+4\sqrt{3}}{4}$

$EB^2 = (2+\sqrt{3})$ ~~cm~~

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$(FB) = \left(\sqrt{2+\sqrt{3}}\right)^2$

$FB^2 = 2+\sqrt{3}$
~~or~~ So, $FB^2 = EB^2$
Comparing (+)ve no.s is the same as comparing their squares

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