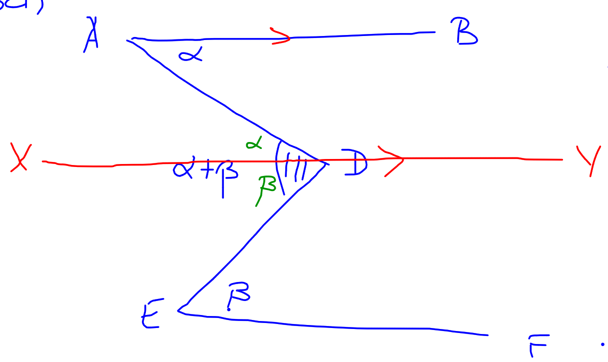
13d)



Construct XY // AB passing through D.

$\angle ADX = \alpha$ (alternate $\angle$'s =, AB//XY)

$\angle ADE = \angle ADX + \angle XDE$ (common $\angle$)

$\angle ADE = \alpha + \beta$ (given)

$\therefore \alpha + \beta = \alpha + \angle XDE$

$\angle XDE = \beta$

$\angle DEF = \beta$ (given)

$\therefore \angle XDE = \angle DEF = \beta$

Thus XY // EF (alternate $\angle$'s =)

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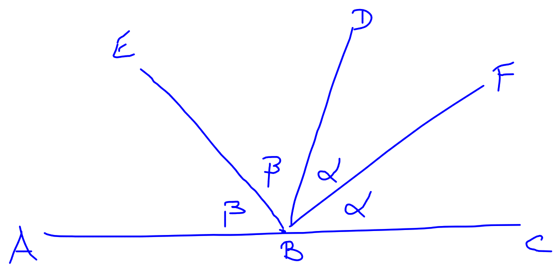


$\angle FBC + \angle DBF + \angle DBE + \angle EBA = 180^\circ$ (straight $\angle ABC$)

FB bisects $\angle DBC$

$\therefore \angle DBF = \angle FBC = \alpha$

Similarly $\angle ABE = \angle DBE = \beta$

$\alpha + \alpha + \beta + \beta = 180$

$2\alpha + 2\beta = 180$

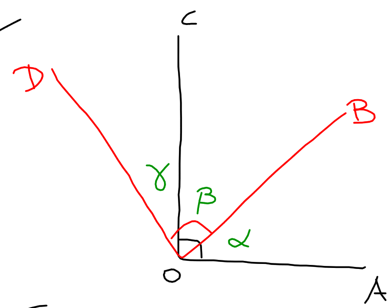
$\alpha + \beta = 90$

$\angle EBF = \angle FBD + \angle DBE$ (common $\angle$)

$= \alpha + \beta$

$= 90^\circ$

15/



Show:

$\angle AOD + \angle BOC = 180$

Let $\angle AOB = \alpha$, $\angle BOC = \beta$, $\angle COD = \gamma$

$\angle AOC = \alpha + \beta = 90$ (given)

$\angle BOD = \beta + \gamma = 90$ (given)

$\therefore \alpha + 2\beta + \gamma = 180$

$\angle AOD = \angle AOB + \angle BOC + \angle COD$ (common $\angle$)

$= \alpha + \beta + \gamma$

$\angle AOD + \angle BOC = \alpha + \beta + \gamma + \beta$

$= \alpha + 2\beta + \gamma$

$= 180$