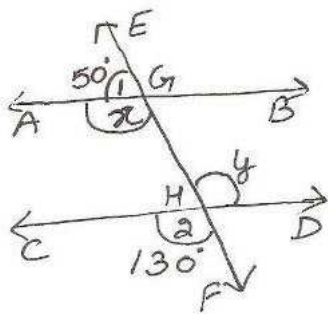


①



to show $AB \parallel CD$

proof $y = \angle 2 = 130^\circ$
[vert. opp. \angle s]

$\angle 1 + x = 180^\circ$ (linear pair axioms)

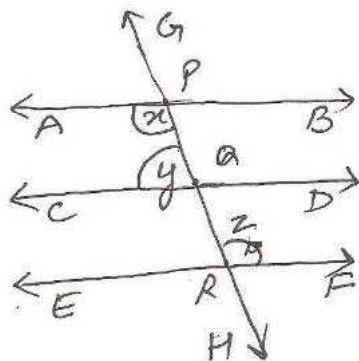
$$50 + x = 180$$

$$\Rightarrow x = 180 - 50 = 130^\circ$$

$\therefore x = y = 130^\circ$
But these are alter. interior angles

$\therefore AB \parallel CD$

②



to find x

Sol Let $y = 3a^\circ, z = 7a^\circ$

$AB \parallel CD$
 $CD \parallel EF$

$\therefore AB \parallel CD \parallel EF$

$x = z = 7a^\circ$ [Alternate interior angles]

$x + y = 180^\circ$ [Co interior angles]

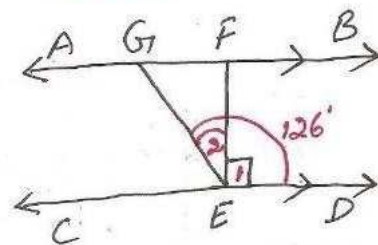
$3a^\circ + 7a^\circ = 180^\circ$

$10a^\circ = 180^\circ$

$a = 18$

$x = 126^\circ$

③



to find $\angle AGE, \angle GEF, \angle FGE$

Sol $\angle GED = 126^\circ$

$\angle 1 + \angle 2 = 126^\circ$

$90 + \angle 2 = 126$

$\Rightarrow \angle 2 = 126 - 90$

$\angle GEF = 36^\circ$

$\angle AGE = \angle GED = 126^\circ$

[alternate interior \angle s] $AB \parallel CD$

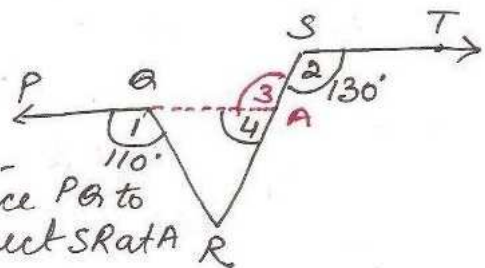
$\angle AGE + \angle FGE = 180^\circ$ (linear pair axiom)

$126 + \angle FGE = 180$

$\Rightarrow \angle FGE = 180 - 126$

$= 54^\circ$

④



const - Produce PQ to intersect SR at A

to find $\angle QRS$

Sol $PA \parallel ST$ [$\because PA \parallel ST$]

$\angle 3 = \angle 2 = 130^\circ$

$\angle 3 + \angle 4 = 180^\circ$ (linear pair axiom)

$130 + \angle 4 = 180$

$\Rightarrow \angle 4 = 180 - 130$

$\angle 1 = \angle 4 + \angle R$ (exterior \angle prop)

$110 = 50 + \angle R$

$\Rightarrow \angle R = 110 - 50$

$\Rightarrow \angle QRS = 60^\circ$