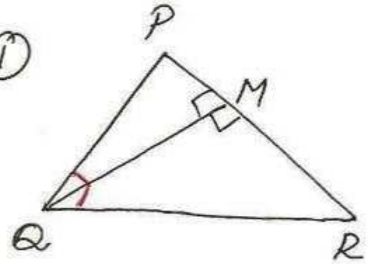
ex 6.3

(1)



To prove $QM^2 = PM \times MR$

Proof $PR^2 - PQ^2 = QR^2$

$\Rightarrow PR^2 = PQ^2 + QR^2$

$\therefore \angle PQR = 90^\circ$ by converse of pythagoras theorem

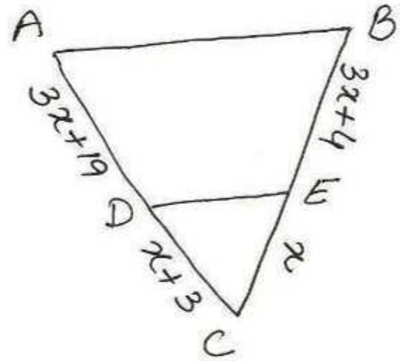
$QM \perp PR$

$\Rightarrow \Delta PMQ \sim \Delta QMR$

$\Rightarrow \dfrac{PM}{QM} = \dfrac{MQ}{MR}$

$\Rightarrow QM^2 = PM \times MR$

(2)



In Δ CAB, DE $\parallel$ AB

$\dfrac{CD}{DA} = \dfrac{CE}{EB}$ [Basic Prop theorem]

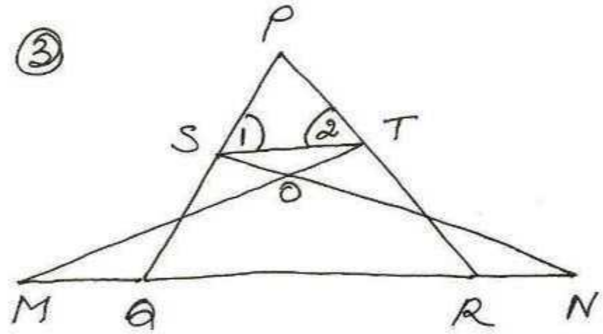
$\dfrac{x+3}{3x+19} = \dfrac{x}{3x+4}$

$\Rightarrow \cancel{3x^2} + 4x + 9x + 12 = \cancel{3x^2} + 19x$

$\Rightarrow 6x = 12$

$\Rightarrow x = 2$

(3)



given - In fig. $\angle 1 = \angle 2$, $\Delta NSQ \cong \Delta MTR$

To prove $\Delta PTS \sim \Delta PRQ$

Proof In ΔPST

$\angle 1 = \angle 2$

$\Rightarrow PT = PS \cdots (1)$ [converse of isos. Δ prop]

$\Delta NSQ \cong \Delta MTR$

$\Rightarrow SQ = TR$

$\Rightarrow TR = SQ \cdots (ii)$

(i) $\div$ (ii)

$\dfrac{PT}{TR} = \dfrac{PS}{SQ}$

$\angle P = \angle P$ (common)

$\Delta PTS \sim \Delta PRQ$ by SAS prop.