



given - In $\triangle PQR$, $\angle Q > \angle R$

to prove - $PR > PQ$

construction - Take a point S on PR,
s.t. $\angle SQR = \angle R$

proof In $\triangle SQR$, $\angle Q = \angle R$ (const.)

$\therefore SR = SQ$ (converse of isosceles \triangle prop.)

adding PS on both sides

$$SR + PS = SQ + PS$$

$$PR = SQ + PS \dots \textcircled{I}$$

In $\triangle PQS$

$$SQ + PS > PQ \dots \textcircled{II}$$

[In a \triangle , sum of any 2 sides is greater than the third side]

From $\textcircled{I}, \textcircled{II}$

$$PR > PQ$$

In a \triangle greater angle has longer side opposite to it.