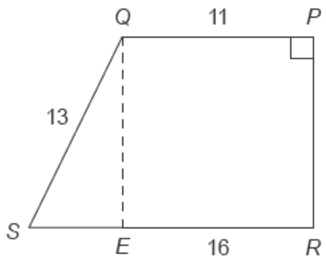
Pythagoras' Theorem Part 2

Solution

6. (a) Draw a perpendicular line QE.



$SE = 16 - 11 = 5$

$QS = 13$

In ΔEQS,

$QE^2 + 5^2 = 13^2$

$QE = 12$

$PR = QE = 12$

(b) Area of the trapezium $= \frac{1}{2} \times (16 + 11) \times 12$

$= 162$

7. (a) In ΔACD,

$CD^2 = 12^2 + 9^2$ (Pyth. Thm.)

$CD = 15$

(b) In ΔABC,

$20^2 = AB^2 + 12^2$ (Pyth. Thm.)

$AB = 16$

(c) $BD = 16 + 9 = 25$

$BD^2 = 25^2 = 625$

$BC^2 + CD^2 = 20^2 + 15^2$

$= 625$

Since $BC^2 + CD^2 = BD^2$

$\therefore$ ΔBCD is a right-angled triangle.

(Converse of Pyth. Thm.)

8. (a) In ΔDFC,

$FC^2 = 12^2 + 16^2$ (Pyth. Thm.)

$= 400$

$FC = 20$

$EC^2 = 19^2 + 8^2$ (Pyth. Thm.)

$EC = 5\sqrt{17}$

$EF^2 = 4^2 + 3^2$ (Pyth. Thm.)

$EF = 5$

(b) In ΔEFC,

$EC^2 = 425$

$EF^2 + FC^2 = 400 + 25$

$= 425$

Since $EF^2 + FC^2 = EC^2$

$\therefore \angle EFC = 90°$ (Converse of Pyth. Thm.)

(c) Area of $\Delta EFC = \frac{1}{2} \times 20 \times 5$

$= 50$