



G1484ANS

All of the triangles are similar, Let DE=a and AB=b

$$\frac{FD}{b} = \frac{BF}{a}, \quad \frac{FD}{b} = \frac{414.77}{846.77}, \quad \frac{BF}{a} = \frac{846.77}{414.77}$$

$$FD = \frac{414.77}{846.77} \cdot b, \quad BF = \frac{846.77}{414.77} \cdot a$$

$$\frac{FD}{DE} = \frac{R}{414.77}, \quad R = \frac{414.77 \cdot b \cdot 414.77}{846.77 \cdot a} = \frac{414.77^2}{846.77} \cdot \frac{b}{a} \dots\dots[1]$$

$$\frac{BF}{AB} = \frac{R}{846.77}, \quad R = \frac{846.77 \cdot a \cdot 846.77}{414.77 \cdot b} = \frac{846.77^2}{414.77} \cdot \frac{a}{b} \dots\dots[2]$$

$$\frac{414.77^2 \cdot b}{846.77 \cdot a} = \frac{846.77^2 \cdot a}{414.77 \cdot b}$$

$$414.77^3 \cdot b^2 = 846.77^3 \cdot a^2$$

$$\frac{a}{b} = \sqrt{\frac{414.77^3}{846.77^3}} = 0.342817$$

$$\text{from [2]... } R = \frac{846.77^2}{414.77} \cdot 0.342817 = 592.63$$