

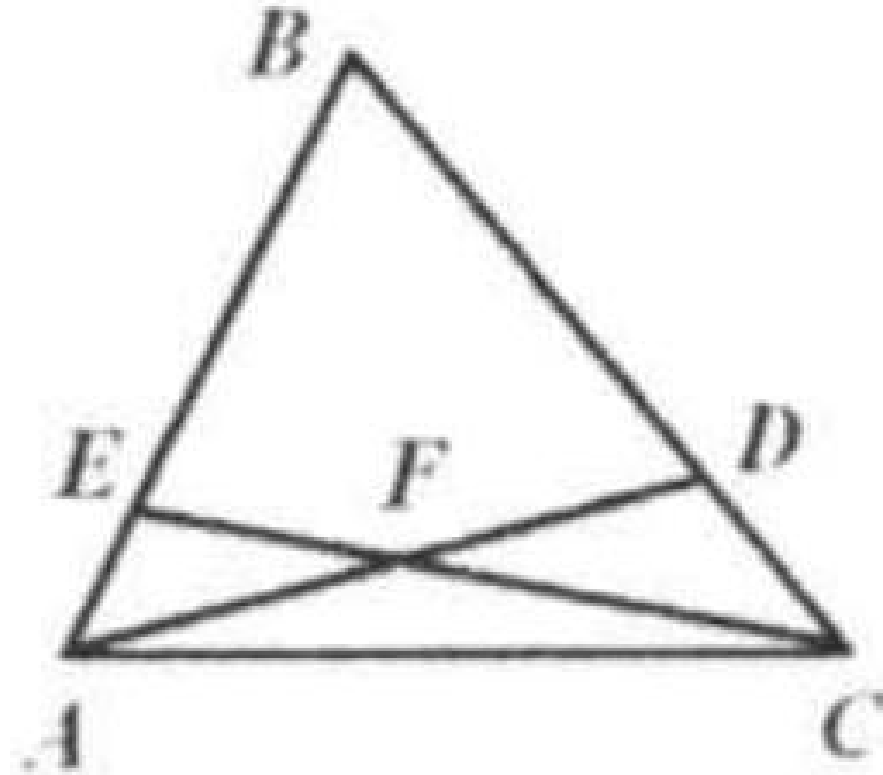
Problem 5

Problem

(AMC) Point E is selected on side AB of triangle ABC in such a way that $AE : EB = 1 : 3$ and point D is selected on side BC so that $CD : DB = 1 : 2$.

The point of intersection of AD and CE is F . Then

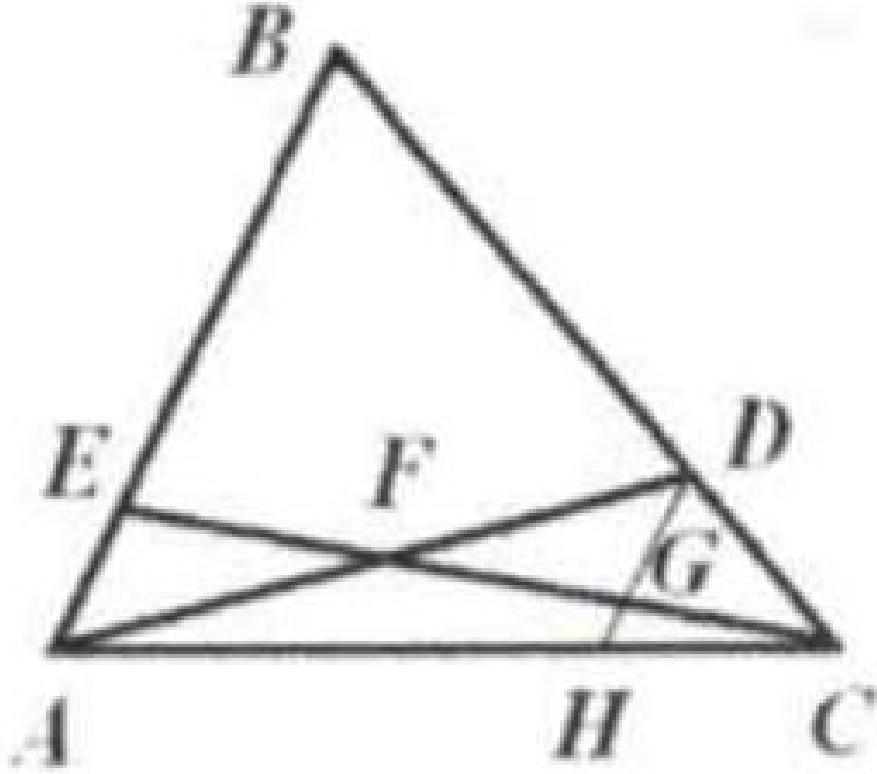
- $\frac{EF}{FC} + \frac{AF}{FD}$ is (A) $\frac{4}{5}$
(B) $\frac{3}{4}$
(C) $\frac{5}{2}$
(D) 2
(E) $\frac{5}{2}$



Solution

(C).

Draw $DH \parallel AB$. $\therefore DG : 3a = b : 3b$; $DG = a = EA$. $\therefore EF = FG$ and $AF = GD$, so that $AF/FD = 1$. Also $DH : 4a = b : 3b$, $DH = 4a/3$ and $GH = DH - DG = a/3$; $\therefore GC = \frac{1}{3}EC$ and $EG = \frac{2}{3}EC$ and , since $EF = FG$, $FC = \frac{2}{3}EC$. \therefore



$$\begin{aligned} EF/FC &= \frac{1}{2}. \\ \therefore (EF/FC) + (AF/FD) &= \frac{1}{2} + 1 = \frac{3}{2}. \end{aligned}$$