(1) $\angle AEB + \angle CBF = \angle CFB + \angle CBF = 90^{o}$

得

$$\left.\begin{array}{r}\angle AEB = \angle CFB \\ \angle ABC = \angle BCD \\ BE = CF\end{array}\right\} \Rightarrow \Delta ABE \cong \Delta BCF \Rightarrow BE = CF$$

(2)

$$BE^2 = BC \cdot CE \Rightarrow BE^2 = BC(BC - BE) \Rightarrow \frac{BE}{BC} = \frac{\sqrt{5}-1}{2} \Rightarrow \tan \angle BAE = \frac{BE}{AB} = \frac{BE}{BC} = \frac{\sqrt{5}-1}{2}$$

利用二倍角公式

$$\angle CMB = 2\angle EAB \Rightarrow \tan \angle CMB = \tan 2\angle EAB \xrightarrow{\text{二倍角公式}} \tan \angle CMB = \frac{2\tan \angle EAB}{1 - (\tan \angle EAB)^2} = 2$$

从而解得

$$\tan \angle EAB = \frac{\sqrt{5}-1}{2}$$

满足题意，得证.