

Hallar k , para que el u^o complejo

$$\frac{(2+ki) \cdot (1+i)}{3-2i}$$

a) sea u^o Real Puro

b) sea u^o Imaginario Puro

$$\begin{aligned}\frac{(2+ki)(1+i)}{3-2i} &= \frac{2+2i+ki+ki^2}{3-2i} = \\&= \frac{2+2i+ki+k(-1)}{3-2i} = \frac{(2+2i+ki-k)(3+2i)}{(3-2i)(3+2i)} = \\&= \frac{6+4i+6i+4i^2+3ki+2ki^2-3k-2ki}{3^2-(2i)^2} = \\&= \frac{6+10i+4(-1)+3ki+2k(-1)-3k-2ki}{9-4i^2} = \\&= \frac{6-4-2k-3k+10i+3ki-2ki}{9+4} = \\&= \frac{(2-5k)+(10+k)i}{13} = \boxed{\frac{2-5k}{13} + \frac{10+k}{13}i}\end{aligned}$$

a) Real Puro (sin parte imaginaria)

$$\frac{10+k}{13} = 0 \Rightarrow 10+k=0 \Rightarrow \boxed{k=-10}$$

b) Imaginario Puro: (sin parte real)

$$\frac{2-5k}{13} = 0 \Rightarrow 2-5k=0 \Rightarrow 5k=2 \Rightarrow \boxed{k=\frac{2}{5}}$$