

填充9

$$\text{令 } z=x+yi \Rightarrow z+k=(x+k)+yi \Rightarrow \text{Arg}\left(\frac{x^2+y^2+kx}{x^2+y^2}-\frac{kyi}{x^2+y^2}\right)=\frac{\pi}{6}$$

$$\Rightarrow x^2+y^2+k(x+\sqrt{3})y=0\dots\dots(1)$$

$$\text{同理 } \text{Arg}\left(\frac{x^2+y^2+3kx+2k^2-kyi}{(x+k)^2+y^2}\right)=\frac{\pi}{4} \Rightarrow x^2+y^2+k(3x+y)+2k^2=0\dots\dots(2)$$

$$\text{By (1), (2)} \Rightarrow k=-x-\frac{1}{2}y+\frac{\sqrt{3}}{2}y\dots\dots(3) \text{將之帶入(1)} \Rightarrow x=(3\sqrt{3}-4)y$$

$$\text{最後 } \frac{k}{z}=\frac{-x-\frac{1}{2}y+\frac{\sqrt{3}}{2}y}{x+yi}=\frac{(4-3\sqrt{3})y-\frac{1}{2}y+\frac{\sqrt{3}}{2}y}{(3\sqrt{3}-4)y+iy}=\frac{(-5+\sqrt{3})}{8}+\frac{(1+\sqrt{3})i}{8}$$