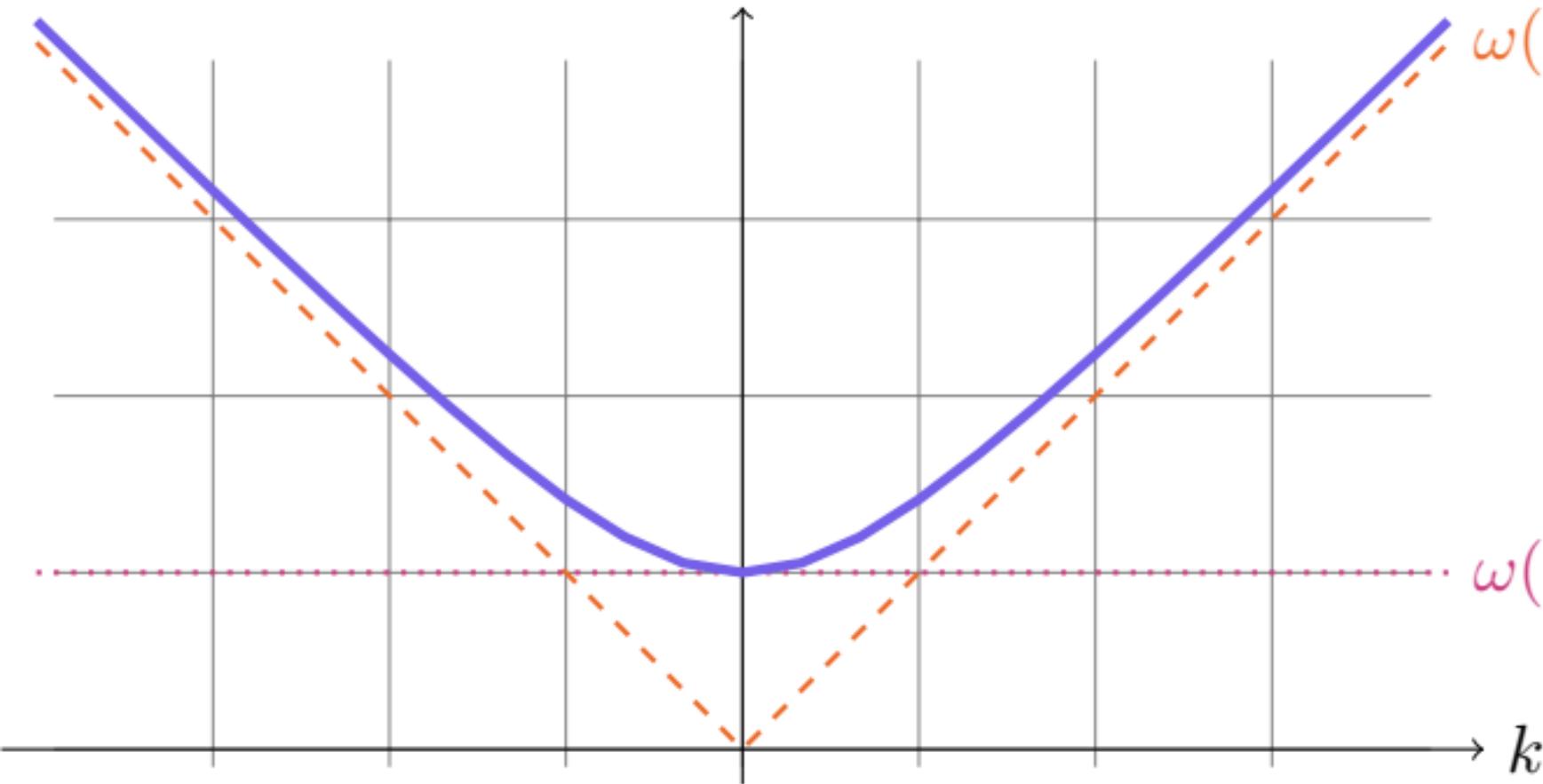


$\omega(k)$ 

$$\omega(k) = \sqrt{f^2 + c^2 k^2}$$

$$\omega(k) = |ck|$$



$$\omega(k) = f$$