

1.

The domain is all values that k is allowed to be.

Since I can't divide by zero (division by zero isn't allowed,
I need to find all values of k that would cause division by zero.
The domain will then be all other k -values.

When is this denominator equal to zero?

$$k^4 + 25 = 0$$

impossible , then the domain of f is $(-\infty, \infty)$ i.e. $k \in \mathbb{R}$