

1.

To find the vertical asymptote :

We must set the denominator equal to 0 and solve:

$$k^4 - 256 = 0$$

$$(k^2 - 16)(k^2 + 16) = 0$$

$$(k^2 - 16) = 0$$

$$(k - 4)(k + 4) = 0$$

$$k = 4 \text{ or } k = -4$$

There is vertical asymptote at  $k=4$  and at  $k=-4$

To find the horizontal asymptote :

First we must compare the degrees of the polynomials.

The numerator contains a 3<sup>rd</sup> degree polynomial while the denominator contains a 4<sup>th</sup> degree polynomial.

Since the polynomial in the numerator is a lower degree than the denominator, the horizontal asymptote is located at  $s=0$ .

To find the oblique asymptote :

Since the degrees of the numerator are less than the degrees of the denominator, this rational does not have an oblique asymptote

