

4.

To find the vertical asymptote :

We must set the denominator equal to 0 and solve:

$$j^4 - 16 = 0$$

$$(j^2 - 4)(j^2 + 4) = 0$$

$$(j^2 - 4) = 0$$

$$(j - 2)(j + 2) = 0$$

$$j = 2 \text{ or } j = -2$$

There is vertical asymptote at $j = 2$ and at $j = -2$

To find the horizontal asymptote :

First we must compare the degrees of the polynomials.

The numerator contains a 3rd degree polynomial while the denominator contains a 4th degree polynomial.

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

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

