

5.

To find the vertical asymptote :

We must set the denominator equal to 0 and solve:

$$q^4 - 625 = 0$$

$$(q^2 - 25)(q^2 + 25) = 0$$

$$(q^2 - 25) = 0$$

$$(q - 5)(q + 5) = 0$$

$$q = 5 \text{ or } q = -5$$

There is vertical asymptote at $q = 5$ and at $q = -5$

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 $t = 0$.

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

