1.

It so happens that this function can be simplified as:

$q(d) = \frac{-1+d^3}{-2+d+d^2}$

$= \frac{(d-1)\left(d^2+d+1\right)}{(d-1)(d+2)}$

$= \frac{d^2+d+1}{d+2}$

To find the vertical asymptote :

$d+2=0$

$d=-2$

There is a vertical asymptote at $d=-2$

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 2nd degree polynomial.

Since the polynomial in the numerator is a higher degree than the denominator, there is no horizontal asymptote.

To find the oblique asymptote :

we must divide the numerator by the denominator $\frac{-1+d^3}{-2+d+d^2} = \frac{d^2+d+1}{d+2} = \frac{3}{d+2} + (d-1)$

There is an oblique asymptote at $a=d-1$