4.

It so happens that this function can be simplified as:

$$t(d) = \frac{-125+d^3}{-5-4d+d^2}$$

$$= \frac{(d-5)\left(d^2+5d+25\right)}{(d-5)(d+1)}$$

$$= \frac{d^2+5d+25}{d+1}$$

To find the vertical asymptote :

$d + 1 = 0$

$d = -1$

There is a vertical asymptote at $d = -1$

To find the horizontal asymptote :

First we must compare the degrees of the polynomials.

The numerator contains a 3^{rd} degree polynomial while the denominator contains a 2^{nd} 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 $\frac{-125+d^3}{-5-4d+d^2} = \frac{d^2+5d+25}{d+1} = \frac{21}{d+1} + (d+4)$

There is an oblique asymptote at $h = d + 4$