2.

It so happens that this function can be simplified as:

$$f(r) = \frac{-1+r^3}{-2+r+r^2}$$

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

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

To find the vertical asymptote :

$r + 2 = 0$

$r = -2$

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

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

There is an oblique asymptote at $h = r - 1$