2.

It so happens that this function can be simplified as:

$$m(u) = \frac{-125+u^3}{-15-2u+u^2}$$

$$= \frac{(u-5)\left(u^2+5u+25\right)}{(u-5)(u+3)}$$

$$= \frac{u^2+5u+25}{u+3}$$

To find the vertical asymptote :

$u + 3 = 0$

$u = -3$

There is a vertical asymptote at $u = -3$

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 $\frac{-125+u^3}{-15-2u+u^2} = \frac{u^2+5u+25}{u+3} = \frac{19}{u+3} + (u+2)$

There is an oblique asymptote at $t = u + 2$