2.

It so happens that this function can be simplified as:

$b(u) = \frac{-125+u^3}{-10-3u+u^2}$

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

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

To find the vertical asymptote :

$u + 2 = 0$

$u = -2$

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

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 $\frac{-125+u^3}{-10-3u+u^2} = \frac{u^2+5u+25}{u+2} = \frac{19}{u+2} + (u+3)$

There is an oblique asymptote at $q = u + 3$