1.

It so happens that this function can be simplified as:

$$u(c) = \frac{-27+c^3}{-3-2c+c^2}$$

$$= \frac{(c-3)\left(c^2+3c+9\right)}{(c-3)(c+1)}$$

$$= \frac{c^2+3c+9}{c+1}$$

To find the vertical asymptote :

$c + 1 = 0$

$c = -1$

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

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 $\frac{-27+c^3}{-3-2c+c^2} = \frac{c^2+3c+9}{c+1} = \frac{7}{c+1} + (c+2)$

There is an oblique asymptote at $r = c + 2$