1.

It so happens that this function can be simplified as:

$$a(c) = \frac{-27+c^3}{-15+2c+c^2}$$

$$= \frac{(c-3)\left(c^2+3c+9\right)}{(c-3)(c+5)}$$

$$= \frac{c^2+3c+9}{c+5}$$

To find the vertical asymptote :

$c + 5 = 0$

$c = -5$

There is a vertical asymptote at $c = -5$

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 $\frac{-27+c^3}{-15+2c+c^2} = \frac{c^2+3c+9}{c+5} = \frac{19}{c+5} + (c-2)$

There is an oblique asymptote at $j = c - 2$