3.

It so happens that this function can be simplified as:

$$f(s) = \frac{-64+s^3}{-8-2s+s^2}$$

$$= \frac{(s-4)\left(s^2+4s+16\right)}{(s-4)(s+2)}$$

$$= \frac{s^2+4s+16}{s+2}$$

To find the vertical asymptote :

$s+2=0$

$s=-2$

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

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 $\frac{-64+s^3}{-8-2s+s^2} = \frac{s^2+4s+16}{s+2} = \frac{12}{s+2} + (s+2)$

There is an oblique asymptote at $g=s+2$