1.

It so happens that this function can be simplified as:

$$d(j) = \frac{-3-13j+10j^2}{1+5j}$$

$$= \frac{(2j-3)(5j+1)}{5j+1}$$

$$= 2j - 3$$

To find the vertical asymptote :

There is no vertical asymptote

To find the horizontal asymptote :

First we must compare the degrees of the polynomials.

The numerator contains a 2^{nd} degree polynomial while the

denominator contains a 1^{st} 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 and so the oblique asymptote $b = 2j - 3$