4.

It so happens that this function can be simplified as:

$$r(t) = \frac{-1-t+2t^2}{1+2t}$$

$$= \frac{(t-1)(2t+1)}{2t+1}$$

$$= t - 1$$

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 $h = t - 1$