5.

It so happens that this function can be simplified as:

$$u(n) = \frac{-10-2n+8n^2}{2+2n}$$

$$= \frac{(2n+2)(4n-5)}{2n+2}$$

$$= 4n - 5$$

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 $v = 4n - 5$