5.

It so happens that this function can be simplified as:

$$p(c) = \frac{-15 - 2c + 8c^2}{5 + 4c}$$

$$= \frac{(2c - 3)(4c + 5)}{4c + 5}$$

$$= 2c - 3$$

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 2nd degree polynomial while the denominator contains a 1st 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 $h = 2c - 3$