Descartes's Rule of Signs

\[ f(x) = 3x^7 - 2x^5 - x^4 + 7x^2 + x - 3 \]

\[ f(-x) = -3x^7 + 2x^5 - x^4 + 7x^2 - x - 3 \]

**Rule of Signs** Let \( f(x) = a_nx^n + a_{n-1}x^{n-1} \ldots + a_0 \) be a poly w/ real coefficients:

1. The number of positive real zeros of \( f \) is either:
   a) the same as the number of sign changes of \( f(x) \) or
   b) less than the number by a positive even integer

   *If \( f \) has just one sign change we know \( f \) has exactly one real positive root.

2. The number of negative real zeros of \( f \) works exactly the same EXCEPT we use \( f(-x) \) to count the sign changes.

\[ f(x) = x^4 - 14x^3 + 71x^2 - 154x + 120 \]

\[ \# \text{ of possible positive real roots} = ? \]

\[ \# \text{ of possible negative real roots} = ? \]