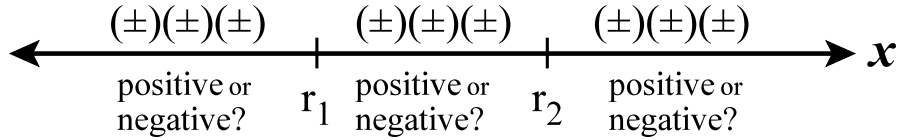
III. Quadratic Inequalities: $ax^2 + bx + c > 0$

may also be $<$, $\leq$ or $\geq$

1. Sign graph method (p.193):

   use when the left-hand expression factors easily into "$a(x - r_1)(x - r_2)$"

   determine the sign of the factored product in each of the (three) intervals where r_1 & r_2 are endpoints...



2. Test-point method (p.194):

   find the roots (r_1 & r_2) to the corresponding quadratic **equation**, then test a value for x in each interval...

3. Examples (p.197): Exercises #46,58,70,72

HW: p.197 / Exercises #45-69(every other odd),71,73

I. Synthetic Division (p.202):

applicable when dividing a polynomial, $P(\boldsymbol{x})$, by a (linear) binomial "$\boldsymbol{x} - c$"; it is a shortcut method for ordinary division...

If $P(\boldsymbol{x}) = a_n\boldsymbol{x}^n + a_{n-1}\boldsymbol{x}^{n-1} + \ldots + a_2\boldsymbol{x}^2 + a_1\boldsymbol{x} + a_0$, then start the process with

$$\begin{array}{c|cccccc} c & a_n & a_{n-1} & \ldots & a_2 & a_1 & a_0 \\ \hline & a_n & & & & & \end{array}$$

multiply $c \times a_n$ and add it to a_{n-1}

$$\begin{array}{c|cccccc} c & a_n & a_{n-1} & \ldots & a_2 & a_1 & a_0 \\ & & c \times a_n & & & & \\ \hline & a_n & a_{n-1} + c \times a_n & & & & \end{array}$$

repeat until remainder appears under a_0

See p.202 example (bottom half of page)

II. Examples (p.210): Exercises #2,8,16

HW: p.210 / Exercises #1-11(odd),15
Read section 3.2 (pp.201-209)