

Notes Section 2.8 Solving Inequalities in One Variable- Polynomial Inequalities

Examples:

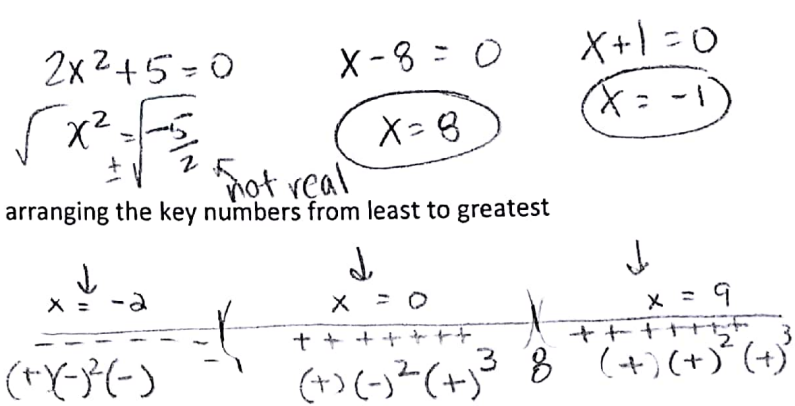
- 1) Determine the x-values that cause the polynomial function to be
 a) zero b) positive $f(x) > 0$ c) negative $f(x) < 0$

$$f(x) = (2x^2 + 5)(x-8)^2(x+1)^3$$

Using a SIGN CHART

Process

- 1) Find the key numbers and draw a number line arranging the key numbers from least to greatest
- 2) Determine the test intervals
- 3) Choose an x value in each interval to test
- 4) Interpret the results and answer all questions



- a) zeros $x = -1, x = 8$
 b) pos $f(x) > 0$ $(-1, 8) \cup (8, \infty)$
 c) neg $f(x) < 0$ $(-\infty, -1)$

- 2) Solve the polynomial inequality using a sign chart. Factor first!

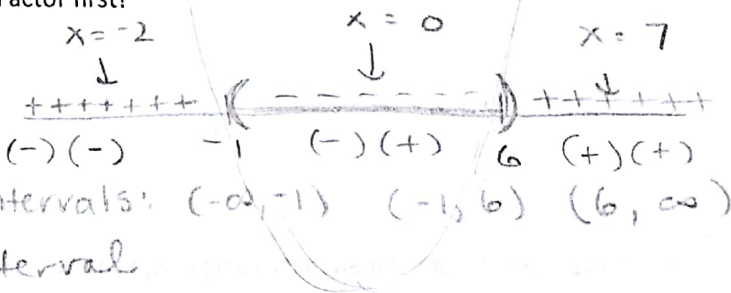
$$x^2 - 5x - 6 < 0$$

$$(x - 6)(x + 1) < 0$$

Zeros $x = 6, x = -1$ test intervals: $(-\infty, -1)$ $(-1, 6)$ $(6, \infty)$

$x^2 - 5x - 6 < 0$ for the interval

$$(-1, 6)$$

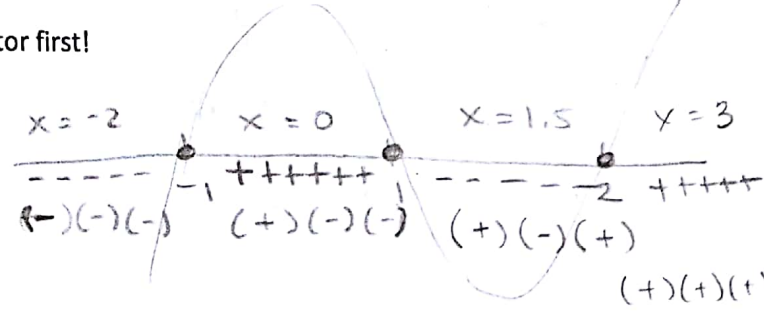


- 3) Solve the polynomial inequality using a sign chart. Factor first!

$$(x+1)(x^2 - 3x + 2) \geq 0$$

$$(x+1)(x-2)(x-1) \geq 0$$

Zeros: $x = -1, x = 1, x = 2$



So $(x+1)(x^2 - 3x + 2) \geq 0$ for intervals

$$[-1, 1] \cup [2, \infty)$$

What is the degree?

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