

Polynomial Inequalities and Graphs of Polynomials

A. Polynomial Inequalities

Solve each inequality algebraically by producing a sign table.

Report your solution in interval notation as well as graph **the solution set on the real number line**.

Please use another sheet of paper to show your work!

1. $(x+6)(x-5)^2(x+5) \geq 0$

2. $(x+4)^2(x-4)(x-3) < 0$

3. $x(x-7)^2(x+7)^2 \geq 0$

4. $(x+4)(x-4)^2(x-5)^2(x+5) \geq 0$

5. $(x-1)(x+1)(x-5)(x+5) < 0$

6. $x^2(x+6)^2(x+5) > 0$

7. $x(x+2)^2(x-2)^3 < 0$

8. $(x-4)^3(x-2)^2(x-1) > 0$

9. $(x+2)^3(x-1)(x-2)^2(x-3) \leq 0$

10. $(x+3)(x-3)^2(x-5)^2 < 0$

B. Graphs of Polynomials

Sketch a possible graph of each of the functions below using the sign table for the corresponding problem in part A. Please use another sheet of paper for your graphs.

1. $f(x) = (x+6)(x-5)^2(x+5)$

2. $f(x) = (x+4)^2(x-4)(x-3)$

3. $f(x) = x(x-7)^2(x+7)^2$

4. $f(x) = (x+4)(x-4)^2(x-5)^2(x+5)$

5. $f(x) = (x-1)(x+1)(x-5)(x+5)$

6. $f(x) = x^2(x+6)^2(x+5)$

7. $f(x) = x(x+2)^2(x-2)^3$

8. $f(x) = (x-4)^3(x-2)^2(x-1)$

9. $f(x) = (x+2)^3(x-1)(x-2)^2(x-3)$

10. $f(x) = (x+3)(x-3)^2(x-5)^2$