

Name: _____

Aim: How do we use upper and lower bounds to help us find roots of polynomials functions?

I. Do Now:

1. Show that all real roots of $f(x) = x^4 - 3x^2 + 2x - 5$ lie between -3 and 2 .

2. Write an equation of a polynomial function whose roots are $\pm\sqrt{7}$ and $-3 \pm \sqrt{6}$

II. Practice: For each polynomial, list all possible rational roots and then use synthetic division, using upper and lower bounds (when helpful) to narrow down the list of possible rational roots, to factor the polynomial completely and find all real roots.

3. $f(x) = 2x^5 + 5x^4 - 8x^3 - 14x^2 + 6x + 9$

4. $f(x) = 2x^4 + 15x^3 + 17x^2 + 3x - 1$

5. $f(x) = x^5 - 7x^4 + 9x^3 + 23x^2 - 50x + 24$

6. $f(x) = 8x^5 - 14x^4 - 22x^3 + 57x^2 - 35x + 6$

7. $f(x) = 3x^6 - 17x^5 + 4x^4 + 34x^3 - 17x^2 - 17x + 10$

8. $f(x) = x^5 - 8x^4 - 9x^3 + 197x^2 - 400x + 75$