Algebra 2 5.7-5.8
Whiteboards?
Quiz Thurs. 5.7-5.8

5-7 Roots and Zeros

State the possible number of positive real zeros, negative real zeros, and imaginary zeros of each function.

48. $f(x) = -2x^3 + 11x^2 - 3x + 2$

(+) 3, 1

(−) 0

(i) 0, 2

1, 2

$\frac{1}{1}\ \frac{1}{2}\ \frac{2}{1}\ \frac{2}{2}$

$\pm 1\ \pm\frac{1}{2}\ \pm 2$

$\pm\left(1, \frac{1}{2}, 2\right)$

49. $f(x) = -4x^4 + 2x^3 - 12x^2 + x - 23$

c c c c

$\pm \frac{1, 2, 3}{1, 2, 4}$

⊕ 0

⊖ 4, 2, 0

↕ 0, 2, 4

$\frac{1}{1}\ \frac{1}{2}\ \frac{1}{4}\ \frac{2}{1}\ \cancel{\frac{2}{2}}\ \cancel{\frac{2}{4}}\ \frac{3}{1}\ \frac{3}{2}\ \frac{3}{4}$

$\pm \left(1, \frac{1}{2}, \frac{1}{4}, 2, 3, \frac{3}{2}, \frac{3}{4}\right)$

50. $f(x) = x^6 - 5x^3 + x^2 + x - 6$

51. $f(x) = -2x^5 + 4x^4 + x^2 - 3$

5-8 Rational Zero Theorem

Find all of the zeros of each function.

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

(+) 1

(−) 2, 0

(x) 0, 2

$-2 \mid 1 \quad 4 \quad 3 \quad -2$

$\quad\quad\downarrow \quad -2 \quad -4 \quad 2$

$\quad\quad 1 \quad 2 \quad -1 \quad 0$

$\pm \frac{1, 2}{1}$

$\pm 1 \quad \pm 2$

$x^2 + 2x - 1 \qquad x = \frac{-2 \pm \sqrt{4+4}}{2} = \frac{-2 \pm \sqrt{8}}{2}$

$= \frac{-2 \pm 2\sqrt{2}}{2}$

$x = -2$

$x = -1 + \sqrt{2}$

$x = -1 - \sqrt{2}$

$2^4 \quad 2^2$

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

$\pm \frac{1}{1, 2, 4}$

(+) 1 $\pm (1, \frac{1}{2}, \frac{1}{4})$

(−) 2, 0

(i) 0, 2

$x = -1$

$x = \frac{1}{2}$

$x = -\frac{1}{2}$

$-1 \;\big]\; 4 \quad 4 \quad -1 \quad -1$

$\quad\quad\;\; \downarrow \quad -4 \quad 0 \quad 1$

$\quad\quad\;\; 4 \quad 0 \quad -1 \quad 0$

$= \pm \frac{0}{8}$

$\frac{1}{8} \quad -\frac{1}{8}$

$-x^2 + 5x - 1$

$4x^2 - 1 = 0$

$b^2 - 4ac$

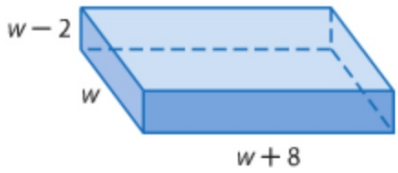
$4 \cdot 4$

$x = \frac{\pm \sqrt{0 + 4}}{8}$

55. $f(x) = x^3 + 2x^2 + 4x + 8$

WB 5.8 prac. rads

56. STORAGE Melissa is building a storage box that is shaped like a rectangular prism. It will have a volume of 96 cubic feet. Using the diagram below, find the dimensions of the box.



Can a length be negative? Imaginary?

What questions do you have?