Algebra 2 5.7-5.8
Whiteboards?
Quiz Thurs. 5.7-5.8
Test Ch. 5 Fri.

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

+	−	imag	total
3	0	0	3
1	0	2	3

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

(+) —

(−) 4, 2, 0

(1)

+	−	i	to top
0	4	0	4
0	2	2	4
0	0	4	4

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

$x = -2$

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

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

⊕ 1 $\quad \pm 1, 2 \quad \pm 1 \quad \pm 2$

⊖ 2, 0 $\quad \dfrac{\pm 1, 2}{1}$

$-2 \;|\; 1 \quad 4 \quad 3 \quad -2$

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

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

$1x^2 + 2x - 1$

$x = \dfrac{-2 \pm \sqrt{4 + 4 \cdot 1 \cdot 1}}{2}$ & $x = \dfrac{-2 \pm \sqrt{8}}{2}$ $\quad 4 \uparrow 2$ $\quad 2 \uparrow 2$

$x = \dfrac{-2 \pm 2\sqrt{2}}{2} = \dfrac{-2}{2} \pm \dfrac{2\sqrt{2}}{2}$

$-1 \pm \sqrt{2}$

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

± 1

$1, 2, 4$

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

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

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

$x = -1$

(+) 1

(−) 2, 0

$\frac{1}{2}$ | 4 4 −1 −1

↓ 2 3 1

4 6 2 0

$\frac{4x^2}{2} + \frac{6x}{2} + \frac{2}{2} = \frac{0}{2}$

$2x^2 + 3x + 1 = 0$

$x = \frac{-3 \pm \sqrt{9 - 4 \cdot 2 \cdot 1}}{4}$

$x = \frac{-3 \pm \sqrt{1}}{4}$

$\frac{-3 \pm 1}{4}$ $\quad -\frac{3+1}{4} = -\frac{2}{4}$

$\frac{-3-1}{4} = \frac{-4}{4} = -1$

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

$x = -2$

$x = 2i$

$x = -2i$

$\pm$ 8, 4, 2, 1 ✓

1

⊕ —

⊖ 3, 1

$x^2 + 4 = 0$

$x^2 = -4$

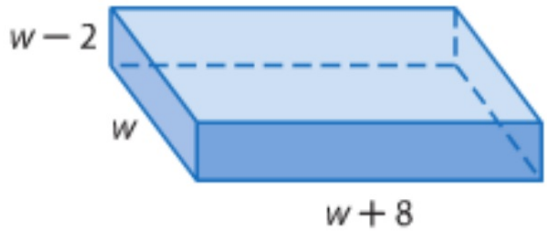
$x = \pm 2i$

-2 | 1 2 4 8

↓ −2 0 −8

1 0 4 0

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?

1 - 19 odds

WB 5.8 prac

21-26 all