Section 2.5B Synthetic Division with imaginary numbers

Solve:

$x^2 + 4 = 0$

$x^2 - 3x + 5 = 0$

Imaginary solutions always come in conjugate pairs.

Examples:

$4i, -4i$

$2 + 6i, 2 - 6i$

$-5 + 7i, -5 - 7i$

Write the polynomial with real coefficients that has the given zeros.

Many solutions: what is "a"

4, $-3i$

-1, 5, $3 - 2i$

Find the polynomial with real coefficients that has the given degree, zeros, and solution point. "a" is a specific value

Degree: 4 Zeros: $-1, 2, \sqrt{2}i$ Point: $f(1) = 12$

Find the polynomial with real coefficients that has the given degree, zeros, and solution point.

Degree: 4 Zeros: $-2, 1 - \sqrt{2}i$ Point: $f(-1) = -12$

Use the given zero to find all of the zeros of the function.

Zero: $3i$ $f(x) = 2x^3 + 3x^2 + 18x + 27$

Use the given zero to find all of the zeros of the function.

Zero: $1 - 2i$ $\quad\quad$ $h(x) = 4x^4 + 17x^2 + 14x + 65$

Write the polynomial as the product of linear factors and list all the zeros of the function.

$h(x) = x^3 - 3x^2 + 4x - 2$

Write the polynomial as the product of linear factors and list all the zeros of the function.

$h(x) = x^4 + 6x^3 + 10x^2 + 6x + 9$

Write the polynomial as the product of linear factors and list all the zeros of the function.

$h(x) = x^5 - 8x^4 + 28x^3 - 56x^2 + 64x - 32$

Section 2.5B

Pg. 162-165: #41, 43, 47, 49, 55, 57, 65, 69, 71, 74, 75, 77, 87, 120