Properties of Roots of Polynomial Equations

1. If a polynomial equation is of degree n, then counting multiple roots separately, the equation has n roots.
2. If a + bi is a root of a polynomial equation with real coefficients ($b \neq 0$), then the imaginary number a – bi is also a root. Imaginary roots, if they exists, occur in conjugate pairs.

Example 3:

a. List all possible rational zeros.
b. Use synthetic division to test the possible rational zeros and find an actual zero.
c. Use the quotient from part (b) to find the remaining zeros of the polynomial function.