

Part I. Using the Fundamental Theorem of Algebra, write, in standard form, a polynomial of least degree with the following roots:

1. Roots: 3, 2, -4
2. Roots: 4 and -2. *-2 is a root with multiplicity of 2.
3. Roots: 5 and $2i$
4. Roots: 3 and $2\sqrt{5}$
5. Root: $4 - 2i$

Part II. a.) State the total number of roots possible according to the Fundamental Theorem of Algebra
b.) Use the Rational Root Theorem to determine all of the possible *rational* zeros of the polynomial

6. $f(r) = r^3 + 6r^2 - 4r + 2$

8. $f(h) = 2h^5 - 6h^4 + 8h^3 - 5h^2 - 8$

7. $f(a) = a^4 - 5a^2 - 2a + 18$

9. $f(c) = -6h^3 - 4h^2 - 5h + 12$

Part III. Find all of the zeros using the Fundamental Theorem of Algebra and Rational Root Theorem

10. $f(x) = x^3 + 4x^2 - 11x - 30$