Solving Polynomial Equations

Keys to Solving Polynomial Functions

1) Must express polynomial function in Standard Form. (Remove Brackets~FOIL, Remove Fractions, etc)

2) Rewrite polynomial in "FACTORED" Form

(Common Factor, Factor Theorem, Sum/Diff. of Cubes, Diff. of Squares, Trinomials, Grouping, etc)

3) Determine roots by setting each factor equal to zero then solving.

4) If quadratic does NOT factor, use quadratic formula to determine roots.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve:

A) $\dfrac{3x^3 + 6}{5} = 3x$

B) $x^4 - 10x^2 + 9 = 0$

C) $x^3 + 12x^2 + 21x - 4 = x^4 - 2x^3 - 13x^2 - 4$

D) $2x^3 + 5x^2 - 3x - 4 = 0$

E) $x^4 - 13x^2 + 36 = 0$

F) $5(x+1)^3 = 5$