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) \[ \frac{3x^3 + 6}{5} = 3x \]

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