# Alg 2    Hwk #12    Solving by Factoring    Fall 2018    Name:

When solving an equation by factoring you should follow these steps:
1. Move all terms to one side of the equation. This means one side will = 0.
2. Factor the nonzero side of the equation completely.
3. Set each factor equal to zero and solve for $x$.

Example:  Solve    $18x^3 + 42x^2 = 36x$

Step 1:  Subtract $36x$ from both sides:   $18x^3 + 42x^2 - 36x = 0$
Step 2:  Factor the left side completely:   $6x(x + 3)(3x - 2) = 0$
Step 3:  Set each factor containing a variable equal to zero and solve.

$6x = 0$          and          $x + 3 = 0$          and          $3x - 2 = 0$

Solutions are:  $x = 0, -3, \frac{2}{3}$

Each equation has been factored for you already, just find the solutions.

1. $(x - 7)(x + 4) = 0$

$x =$

2. $(2x + 9)(3x - 1) = 0$

$x =$

3. $9x(x - 11) = 0$

$x =$

Solve each equation by factoring. Show your work.

4. $x^2 + 9x - 52 = 0$

5. $4x^2 + 13x + 10 = 0$

6. $24x^2 - 42x = 0$

7. $2x^2 - 15x = 27$

8. $20x^2 + 3 = 19x$

9. $3x^3 - 48x = 0$

10. $2x^3 + 5x^2 - 8x - 20 = 0$