Handout 4: Not All Equations Are Created Equal- A

1. Solve $\frac{3}{x+1} + \frac{4}{x-1} = 2$.

   $x = \frac{7+\sqrt{73}}{4}$ and $x = \frac{7-\sqrt{73}}{4}$

2. Solve $-x^4 + 4x^2 - 3 = 0$.

   $x = \pm 1$ and $x = \pm\sqrt{3}$.

3. Solve $x + \frac{1}{2x+1} = 1$.

   $x = 0$ and $x = \frac{1}{2}$.

4. Solve $x - 2\sqrt{x} + 1 = 0$.

   $x = 1$.

5. Solve the inequality $-2x^2 + 3x + 1 < 0$.

   $-\infty < x < \frac{1-\sqrt{17}}{4}$ and $\frac{-3-\sqrt{17}}{4} < x < \infty$.

6. Solve the inequality $x^2 - 3 \geq x$.

   $-\infty < x \leq \frac{1-\sqrt{13}}{2}$ and $\frac{1+\sqrt{13}}{2} x < \infty$.

7. Solve the inequality $-x^2 + 4x > 3$.

   $1 < x < 3$.

8. Solve the inequality $2x^2 + 7x - 2 \leq 2$.

   $-4 \leq x \leq \frac{1}{2}$

9. Solve the inequality $6x < 3x^2 - 9$.

   $-\infty < x < -1$ and $3 < x < \infty$

10. Solve the inequality $-x^2 - 2x + 1 > 0$.

    $-1 - \sqrt{2} < x < -1 + \sqrt{2}$
