Name: _____ _____ **/ 40**

Assessment 1 Instructions:

- The Assessment 1 is 10 problems and is worth 40 points. There is one *Extra Credit problem* which worth 4 points.
- You will have 1 hour to complete AS-1.
- The AS-1 is closed book and closed notes.
- Calculators are not allowed on the Assessment 1.
- Show all your work for full credit and box your final answer.

1. [4 points]

Simplify the exponential expression and write your answer with **only positive exponents**:

$$\left(\frac{25^0(x^{-1}y^3)^{-1}z^4}{x^2yz^{-2}}\right)^{-3}$$

2. [4 points] Simplify the radical expression by rationalizing the denominator:

$$\frac{x}{\sqrt{x}-\sqrt{2}}$$

3. [4 points] Simplify the rational expressions:

a. $\dfrac{x^2-4x+4}{x^2-4}$

b. $\dfrac{3}{2n^2-5n-3} \div \dfrac{1}{2n+1}$

4. **[4 points]** Simplify the following complex expressions:

   a. i^{30}

   b. $(3+i)(2-i)$

5. **[4 points]** Factor **completely** the polynomial expressions:

   a. $x^3 - 27y^3$

   b. $6z^3 + 5z^2 - 36z - 30$

6. **[4 points]** Find the area of a circle ($A = \pi r^2$, where r is the radius of a circle) and state your final answer with including units cm^2:

   $r = 7cm$

7. **[4 points]** Find the solutions to the quadratic equation (use any of the methods which were considered in the class):

   a. $2 + 11x = -5x^2$

   b. $(z-11)^2 = 9$

8. **[4 points]** Find solutions to the radical equation:
$\sqrt{4-x}-x=2$

9. **[4 points]** Find solutions to the rational equation:
$\dfrac{n+7}{n+6}=\dfrac{3}{10}$

10. **[4 points]** Find solutions to the absolute value equation:
$|4x-4|-40=0$

11. **[Extra credit, 4 points]** Solve the following quadratic-like equation:
$(x-1)^2+(x-1)-12=0$