Print Name: _____ Circle Section Time: 10 or 11

> [Some] think that truth is only what sounds nice.
> If truth should prove to be something statistical,
> dry, or factual, something difficult to find and
> requiring study, they do not recognize it as truth;
> it does not intoxicate them. — Bertolt Brecht (1898-1956)

Math 1100 **Test 1** **Part I: Calculator Required**

1. [5 points; C level] Compute $\sqrt{\pi^6 + \sqrt[3]{1243}}$ and express your answer in scientific notation, rounded to five significant digits.

2. [10 points; C level] For your chemistry lab you need to prepare a 10 cc solution of 70% isopropyl alcohol. But in the supply cabinet all you can find is a bottle of 90% isopropyl alcohol. What should you do? Express your final answer in complete sentences. [Note: cc stands for cubic centimeters.]

3. [5 points; C level] Find all real solutions to $x^2 - 5x + 1 = 0$.

4. [5 points; C level] Graph the line given by $y - 3x = 2y + 3$. Label the x and y-intercepts.

5. [10 points; C level] Simplify $\dfrac{(1+i)^2}{2-3i}$, expressing your answer in the form $a + bi$.

6. [10 points; C level] Put $x^2 + y^2 - 4x + 6y - 11 = 0$ into the standard form for an equation of a circle. Graph it, labeling the center. What is the radius?

7. [10 points; B level] Find all real solutions to $\dfrac{x+4}{x-2} = \dfrac{x+2}{2x+1}$.

8. [10 points; B level] Find all real solutions to $\left(\frac{1}{x+1}\right)^2 - 2\left(\frac{1}{x+1}\right) - 8 = 0$.

9. [5 points; C level] Solve the inequality $7 \leq -3x + 8 < 20$. Express you answer in interval notation and graph your result on the real number line.

10. [10 points; B level] Solve the inequality $x^2 + 8x + 15 > 0$. Express you answer in interval notation and graph your result on the real number line.

11. [10 points; C level] Solve the inequality $|3x + 2| \leq 3$. Express you answer in interval notation and graph your result on the real number line.

12. [10 points; A level] Shade in the points in the xy-plane for which $(x - y)(x^2 + y^2 - 9) \leq 0$. Hint: Do not multiply the left hand side out. First think about when it will be equal to zero.