Math 125 Exam # 3

1.) Find a quadratic equation with solutions

a.) $2+3i, 2-3i$ **b.)** $2+\sqrt{3}, 2-\sqrt{3}$

2.) Solve by completing the square: $2x^2-4x+5=0$

3.) Solve using the quadratic formula: $x(3x+1)=12$

4.) Put $f(x)=2x^2+4x+1$ into standard form. State the vertex. Find its x-intercepts and y-intercept. Graph.

Solve:

5.) $(x^2+2x)^2-11(x^2+2x)+24=0$ **6.)** $x^{1/3}+3x^{1/6}-40=0$

7.) $\left(\frac{x}{x-1}\right)^2+\left(\frac{x}{x-1}\right)-2=0$ **8.)** $r-6\sqrt{r}-27=0$

9.) $3x^4+5x^2-2=0$ **10.)** $\sqrt{6x+7}-\sqrt{3x+3}=1$

Simplify:

11.) $\sqrt{6x^2y^3}\sqrt{3x^4y^6}$ **12.)** $\frac{\sqrt{48a^4b^7}}{\sqrt{6ab^5}}$ **13.)** $\sqrt{x^3+3x^2}-\sqrt{4x+12}$

14.) $\left(2\sqrt{3}-3\sqrt{6}\right)^2$ **15.)** $(4+5i)^2$ **16.)** i^{67}

Rationalize the denominator in #17-19:

17.) $\frac{2+6i}{2-6i}$ **18.)** $\frac{3}{\sqrt[3]{4x}}$ **19.)** $\frac{2-\sqrt{5}}{2+\sqrt{5}}$

20.) Find the descriminant of $3x^2+x+6=0$. State how many and what type of solutions the equation has.

For # 21-22, solve, graph on a number line, and write in interval notation:

21.) $x^2-x>2$ **22.)** $\frac{x}{x+1}\geq 2$