04/19/2001 **NAME:**

MATH 1151 QUIZ-11 (15 minutes)

1. (5 points) Write $(\sqrt{3}-i)^6$ in the standard form a+bi.

Solution: Since $\sqrt{3}-i$ is in the fourth quadrant if you look at it you see that it's argument is $11\frac{\pi}{6}$ and it's length is 2. So that is we can write it in polar form as $2*(\cos 11\frac{\pi}{6}+i\sin 11\frac{\pi}{6})$. So by using De Moivre's Theorem we see that sixth power of that number is equal to $2^6*(\cos 6*11\frac{\pi}{6}+i\sin 6*11\frac{\pi}{6})$. So using the period we see that this is equal to $2^6*(\cos\pi+i\sin\pi)=-2^6=-64$ **Q.E.D.**

2.(5 points) Find the vertex,focus and directrix of the parabola $x^2-4x=2y$, graph the equation.

Solution: This is equivalent to $x^2-4x+4=2y+4=2(y+2)$ which is equal to $(x-2)^2=2(y+2)$. So vertex is $(2,-2)$ and since $4a=2$ we have that $a=\frac{1}{2}$, so focus is $(2,-2+\frac{1}{2}=(2,-\frac{3}{2})$ and directrix is $y=-2-\frac{1}{2}=-\frac{5}{2}$, as you can see this is a parabola whose arms looks up, after that graphing is pretty easy. **Q.E.D.**