Math 251
Answers for Practice Test 2a

1. 24.

2. $6x + y - z = 10$.

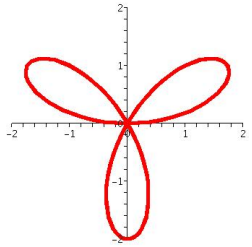
3. A minimum of -12 occurs at $(2, 4)$. You could either check some over points along the line or find the equation of the intersection curve and show it is an upward opening parabola.

4. -1.

5. $(0, 0)$ is a saddle. $\left(\frac{2}{3}, \frac{2}{3}\right)$ is a minimum.

6. 6π.

7. Area is π. See graph below.



8. $I_x = \int_0^{\pi} \int_0^{\sin x} y^2 x \, dy \, dx$ and $m = \int_0^{\pi} \int_0^{\sin x} x \, dy \, dx$. Then $\overline{\overline{y}} = \sqrt{I_x/m} = \frac{\sqrt{2}}{3}$. (You did not need to do the integrals.) [See pages 718-719 for the formulas.]