Name: _____ ID #: _____Section #: _____

Question 1: Find an equation of the plane that passes through the point $P(-1,4,-2)$ and contains the line of intersection between the planes $x - y + 2z = 3$ and $2x - 3y + 2z = 1$

Question 2: Consider the function $f(x,y) = 2x^2 + y^2 - 4x - 4y + 6$.
   a) Identify (name, vertex or center, axis) and sketch the surface $z^2 = f(x,y)$.
   b) Find (equation, name) the level curve of f that passes through the origin.

Question 3: Find and sketch the domain of $f(x,y) = \dfrac{\ln(x^2 + 4y^2 - 16)}{\sqrt{y^2 - x}}$