1. Prepquiz 2 A

Problem 1: The sphere $x^2 + y^2 + z^2 = 14$ and the plane $x + y - z = 0$ intersect in a circle. Find the line tangent to this circle at the point $(1, 2, 3)$.

Problem 2: Find all the circles of radius 1 that are tangent to the curve $\frac{x^2}{4} + y^2 = 2$ at the point $(-2, 1)$.

Problem 3: Find the distance between the curve $x^2 - xy + y^2 = 1$ and the line $x + y = 10$. What is the point closest to the line?