c) r: $\frac{x^2}{a^2} - \frac{x^2}{b^2} = 1$, Δ : y-axis

105. Find the locus of points equidistant from

a) (0, 0, 0) and π: z = -4
b) (3, 1, -5) and π x+2y-2z = 1

106. Construct arid discuss the surfaces:

a) $z^2 = 16$ b) $4y^2$ - 25 = 0 c) $3y^2 + 7z^2 = 0$

d) $4x^2 + z^2 = 16$ e) $y^2 - 9z^2 = 0$ f) $16x^2 - 4y^2 - z^2 = 0$

107. Same question for:

a) $4x^2 + 9y^2 + 16z^2 = 144$ b) $9x^2 - y^2 + 9z^2 = 36$

c) $4x^2 - 9y^2 - 16z^2 = 144$ d) $x^2 + y^2 - z^2 = 25$

108. Construct the solid, in the I. octant, bounded by

a) $x^2 + y^2 = a^2, \quad z = 2mx \quad (a > 0, m > 0)$

b) $x^2 + y^2 = az, \quad x^2 + y^2 = 2ax, \quad z = 0 (a > 0)$

109. Determine the relative positions of the line and quadric Q:

a) $l: \quad \frac{x+6}{2} = \frac{y-6}{-2} = \frac{z-3}{-1}$, Q:$x^2 + y^2 + 4x^2 = 16$

b) $l: \quad x = 3 + 4t, \quad y = \frac{5}{2}t, \quad z = -2t, \quad Q: x^2 - z^2 = 2y.$

c) $l: \quad \frac{x-2}{2} = \frac{y+2}{2} = z - 5, \quad Q: \quad x^2 + y^2 + z^2 = 36$

d) $l: \quad x = 6t, \quad y = 9 + 3t, \quad z = 1 - 2t, \quad Q: y^2 + 4z^2 = 8x.$

110. Write the following in standard form:

a) $x^2 + y^2 + z^2 - 4x + 2y + 6z - 9 = 0$ b) $4x^2 - 4y^2 + 16x + 8z = 0$

111. Same question for:

a) $x^2 + y^2 + z^2 + 2xy = 0$ b) $y^2 - z^2 - 4xz = 0$