112. Write $x^2 + 3y^2 + 2z^2 + 2xy + 3x + 2y + 1 = 0$ in matrix form.
113. Show that the following are degenerate second degree surfaces:
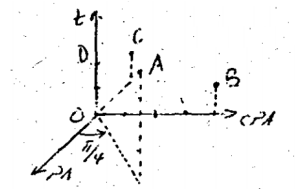
   a) $\frac{x^2}{a^2} - \frac{y^2}{b^2} - \frac{z^2}{c^2} = 0$ \qquad b) $z^2 = ax + by$
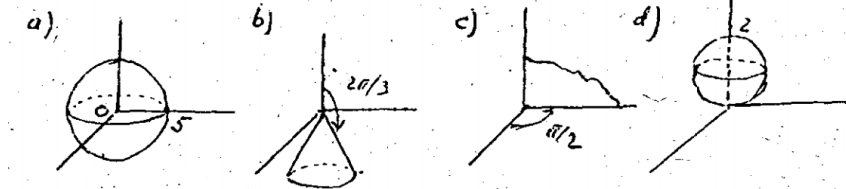
   c) $Ax_1^2 + Bx_1x_2 + Cx_2^2 + Dx_1 + Ex_2 + F = 0$
114. Find the surface through the curve of intersection of
   $z = x^2 + 2y^2, 3x + 4y = 0$ and passing through the point $(0, 1, 4)$.
115. Write the equation of second degree surface passing through the
   nine points:
   $(0, 0, 0), (1, 0, 0), (0, 1, 0), (0, 0, 1), (0, 1, 1), (1, 0, 1), (1, 1, 0), (1, 1, 1), (1, 2, 3)$
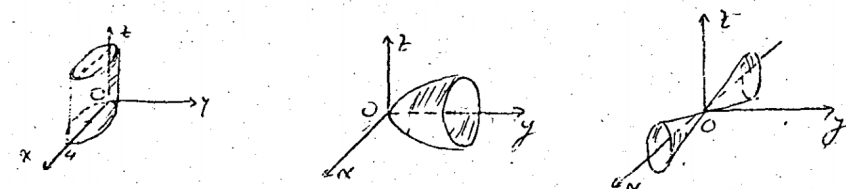
ANSWERS TO EVEN NUMBERED EXERCISES

96.

98.

100.

102.   a) $2x + z^2 = 8$ \qquad\qquad b) $y = (x - 2)^2$

104.   a) $y^2 + z^2 = 3x - 16$ b) $x^2 + y^2 = 2pz$ \qquad c) $\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{a^2} = 1$

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