85. If $a = 5$, $b = 3$, find c, e, p.

    a) for an ellipse, b) for a hyperbola

86. If $p = 4$, find a, b, c.

    a) when $e = 3/5$ b) when $e = 5/3$

87. Show that the circle which is orthogonal to the circles:

    $x^2 + y^2 + 4x + 6y - 5 = 0$, $x^2 + y^2 + 8x + y - 20$,

    $x^2 + y^2 + 6x + 2y - 14 = 0$ is orthogonal to the circle:

    $x^2 + y^2 - 6x + 16y + 30 = 0$.

88. Find the equation of the circle which is orthogonal to the circles:

$$x^2 + y^2 + 3x - 6y - 5 = 0, \quad x^2 + y^2 - 7x - y = 0$$

    and passing through the point $(-3, 0)$.

89. If $ax^2 + 3xy - 2y^2 - 5x + 5y + c = 0$ represents two perpendicular

    lines; find a and c.

90. Transform $2x^2 - 3xy - 2y^2 + 2x + 11y - 12 = 0$, first translating

    0 to $0'(1.2)$ and then rotating the axes through the

    acute angle $\theta = arctan3$.

91. Show that each of the equations

$$3x^2 + 2xy - y^2 + 10x + 6y + 7 = 0$$

and

$$2x^2 + 7xy - 15y^2 + x - 44y - 21 = 0$$

    represents a pair of lines; prove that these four lines are concurrent.

92. Transform $12x^2 - 7xy - 12y^2 - 32x - 24y = 0$, rotating the axes

    through the acute angle $\theta = arctan3/4$.

93. Find the points of intersection of the following curves:

$$r = 4cos30, \qquad r = 2$$