

Mathematics for Science

Assignment 3

Conic Sections and their application: Circles and Parabolas

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Instructions: Attempt all the Questions

- 1) Determine the equation of a circle centre the origin and with the given radius
 - a) 5 units
 - b) 11 units
 - c) 7 units
 - d) 13 units
- 2) Determine the standard and the general equations of the circle with given centre and radius respectively
 - a) (2, 5), 9 units
 - b) (-3, -7), 7 units
 - c) (-2, 6), 3.5 units
 - d) (7, -1), 12 units
- 3) Write the general equation of a circle given the endpoints of its diameter
 - a) (2, 4) and (-3, -1)
 - b) (-1, 5) and (3,7)
 - c) (2, 7) and (-1, -4)
 - d) (5, 3) and (11, 7)
- 4) Determine the centre and radius of the circles
 - a) $x^2 + y^2 - 10x + 8y + 25 = 0$
 - b) $x^2 + y^2 + 16x - 6y + 48 = 0$
- 5) Determine the equation of the circle passing through the points
 - a) (0, -2), (2,0), and (-2,0)
 - b) (-1, -1), (-2, 0), and (0.6, -1.8)
 - c) (1, -11), (-2.6, -9.8), and (-5, -5)
 - d) (-0.5, -1.5), (1.6, -1.15), and (3.0, 0.25)
- 6) Write the equation of the parabola given the following
 - a) Vertex (0, 0) and focus (3, 0)
 - b) Vertex (0, 0) and focus (-2, 0)
 - c) Focus (3, 5) and directrix $y = 1$
 - d) Focus (-2, -1) and directrix $x = 2$