

Conic sections

8.1 Find the center and radius of the following circle: $x^2 + y^2 - 6x - 12y - 55 = 0$.

8.2 Write the equation of the line that is tangent to the circle $(x - 3)^2 + (y + 2)^2 = 61$ at the point $A = (-2, 4)$.

8.3 The lines $y = \frac{4}{3}x - \frac{5}{3}$ and $y = -\frac{4}{3}x - \frac{13}{3}$ each contain diameters of a circle, and the point $A = (-5, 0)$ is also on that circle. Find the equation of this circle.

8.4 Find equation of a tangentline to the circle $(x - 1)^2 + (y + 1)^2 = 25$

a) at point $A = (-2, 3)$

b) which contain point $B = (13, -1)$

c) parallel to the line $x - y - 4 = 0$

d) perpendicular to the line $x + 2y = 0$