

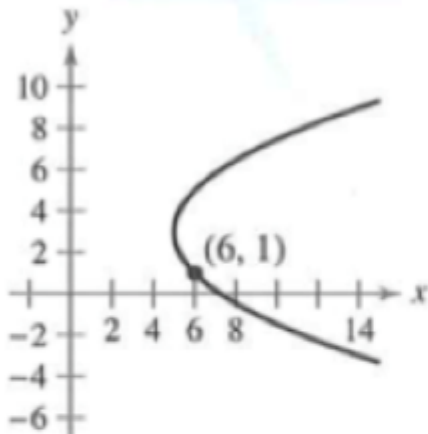
The deadline for all homework assignments is the one specified in Archie before 11:59 pm. As discussed in class, It must be correctly uploaded in order to be graded. Show all your work and justifications.

There are 21 exercises in 4 pages in this assignment:

Famous Curves In Exercises 1-18, find an equation of the tangent line to the graph at the given point. To print an enlarged copy of the graph, go to the website www.mathgraphs.com.

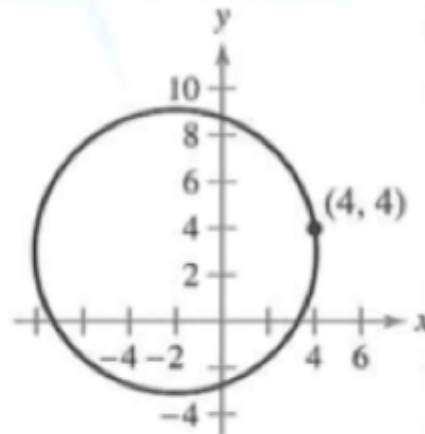
1. Parabola

$$(y - 3)^2 = 4(x - 5)$$



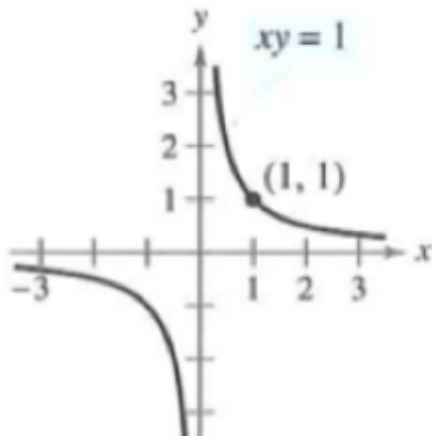
2. Circle

$$(x + 2)^2 + (y - 3)^2 = 37$$



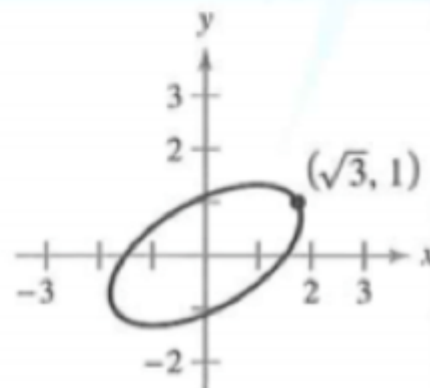
3. Rotated hyperbola

$$xy = 1$$



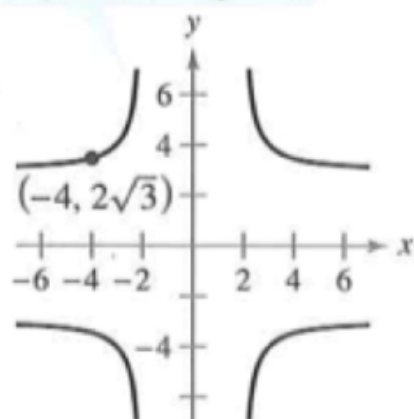
4. Rotated ellipse

$$7x^2 - 6\sqrt{3}xy + 13y^2 - 16 = 0$$



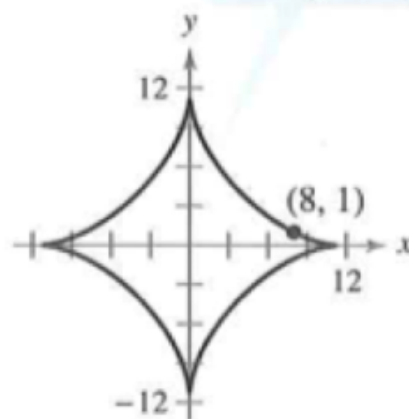
5. Cruciform

$$x^2y^2 - 9x^2 - 4y^2 = 0$$

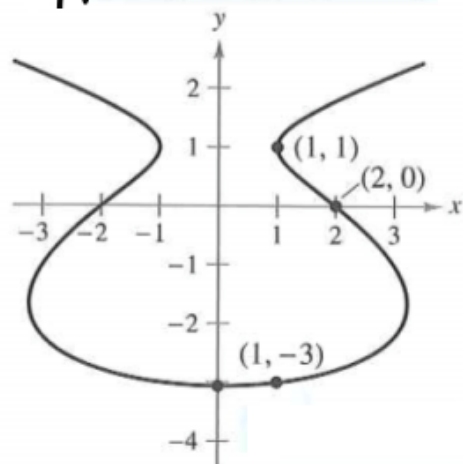


6. Astroid

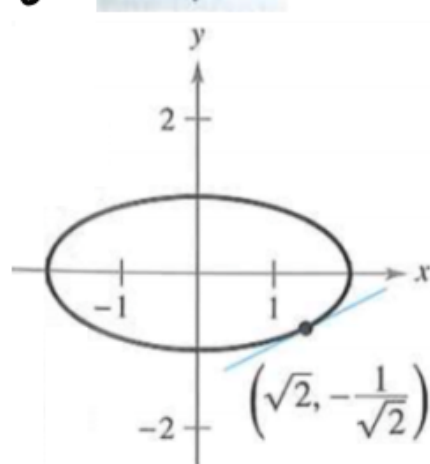
$$x^{2/3} + y^{2/3} = 5$$



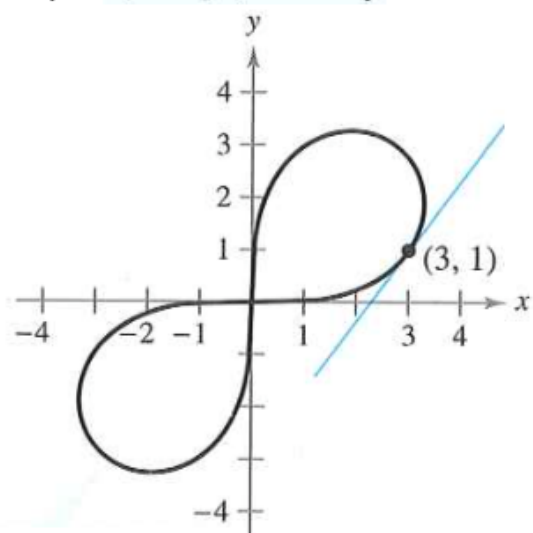
7. $y^3 + y^2 - 5y - x^2 = -4$



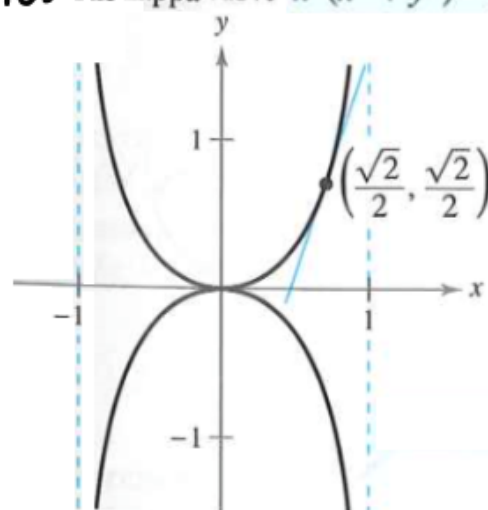
8. $x^2 + 4y^2 = 4$



9. $3(x^2 + y^2)^2 = 100xy$



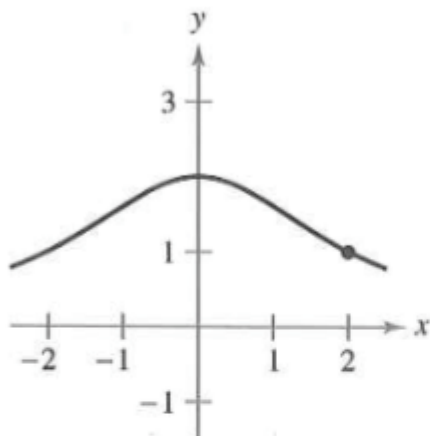
10. The kappa curve $x^2(x^2 + y^2) = y^2$



11. Witch of Agnesi:

$$(x^2 + 4)y = 8$$

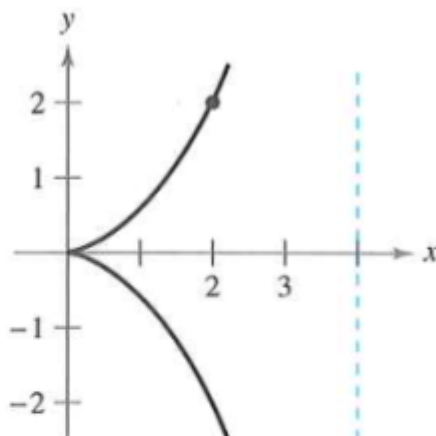
Point: (2, 1)



12. Cissoid:

$$(4 - x)y^2 = x^3$$

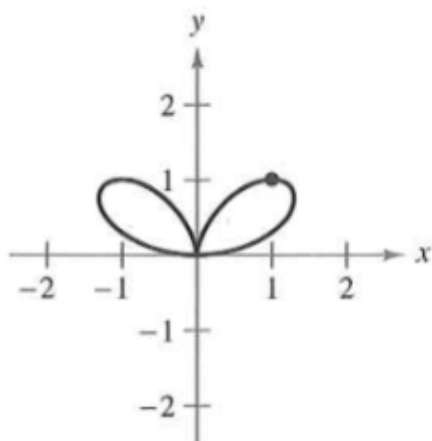
Point: (2, 2)



13. Bifolium:

$$(x^2 + y^2)^2 = 4x^2y$$

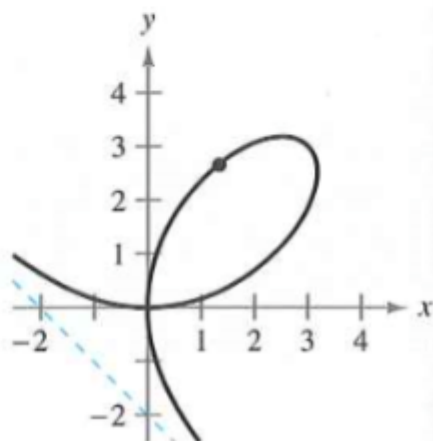
Point: (1, 1)



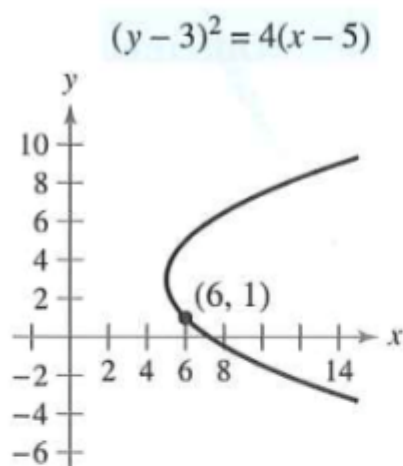
14. Folium of Descartes:

$$x^3 + y^3 - 6xy = 0$$

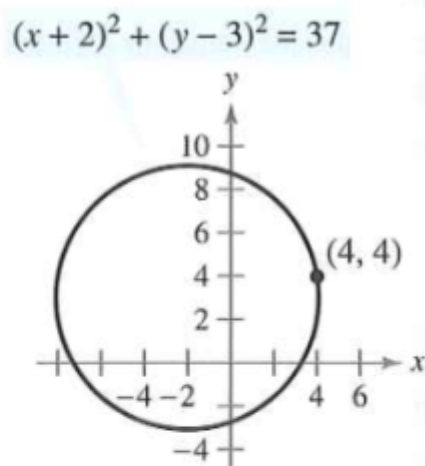
Point: $(\frac{4}{3}, \frac{8}{3})$



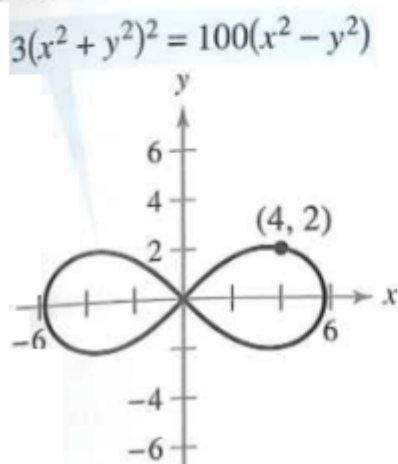
15. Parabola



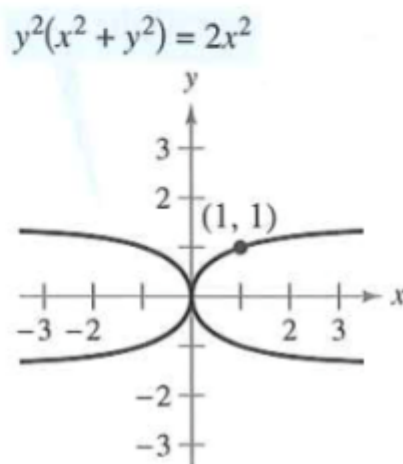
16. Circle



17. Lemniscate



18. Kappa curve



19. Slope Find all points on the circle $x^2 + y^2 = 100$ where the slope is $\frac{3}{4}$.

20. Horizontal Tangent Determine the point(s) at which the graph of $y^4 = y^2 - x^2$ has a horizontal tangent.

21. Tangent Lines Find equations of both tangent lines to the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$ that passes through the point (4, 0).