

1. [-/1 Points]

DETAILS

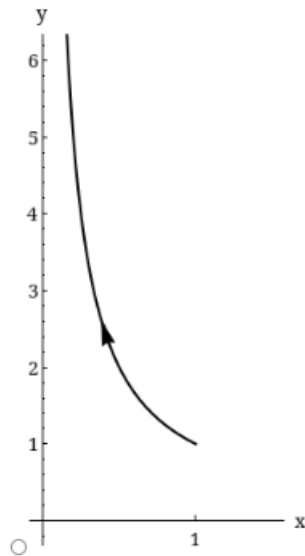
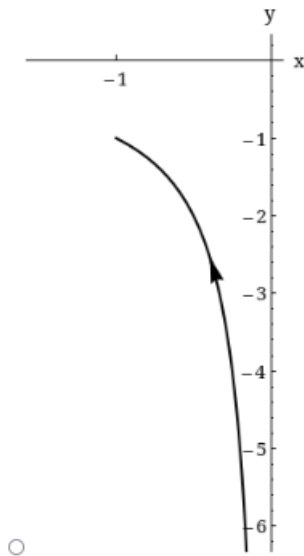
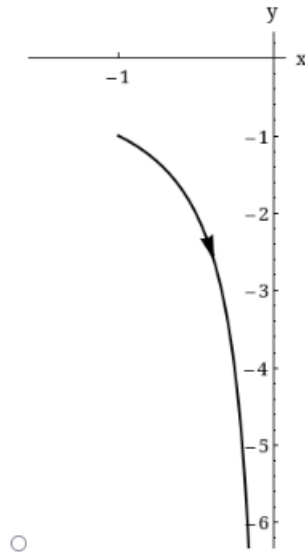
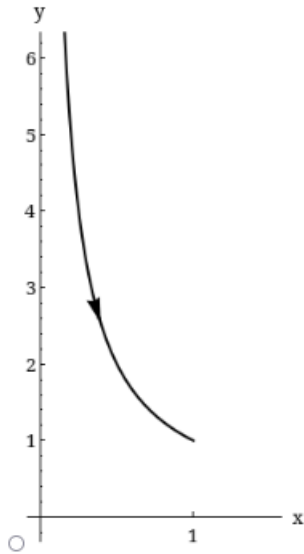
SCALC8 10.1.013.

Consider the following.

$$x = \sin(t), \quad y = \csc(t), \quad 0 < t < \pi/2$$

(a) Eliminate the parameter to find a Cartesian equation of the curve.

(b) Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.



2. [-/1 Points]

DETAILS

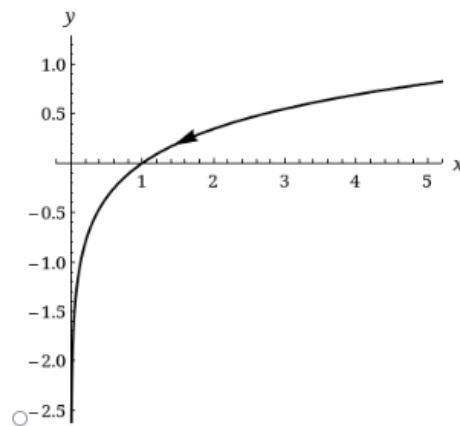
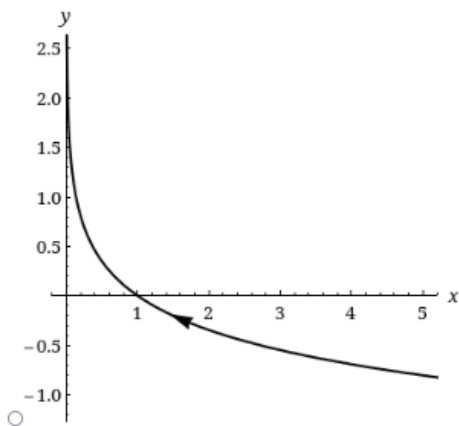
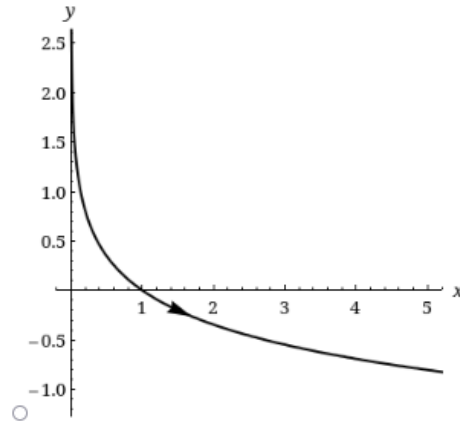
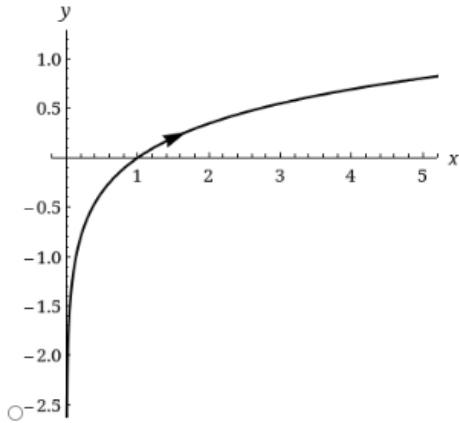
SCALC8 10.1.015.

Consider the following.

$$x = t^2, \quad y = \ln(t)$$

(a) Eliminate the parameter to find a Cartesian equation of the curve.

(b) Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.



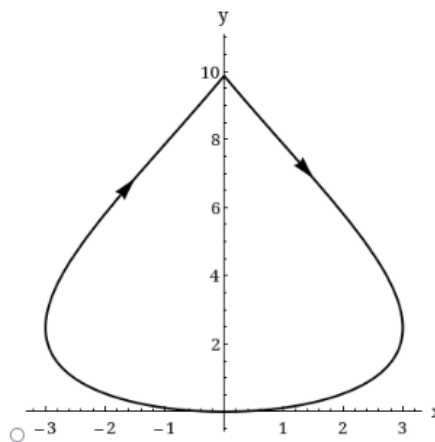
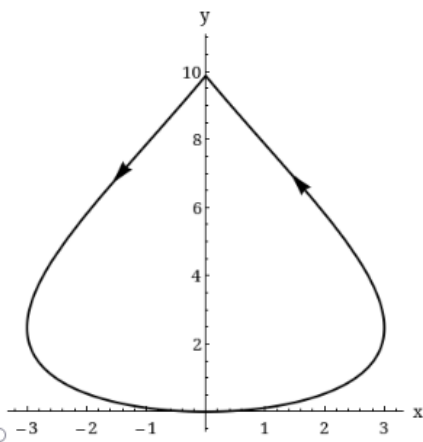
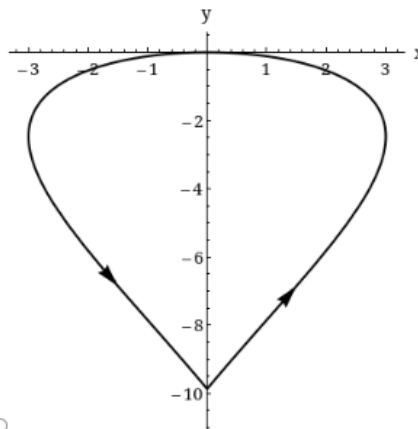
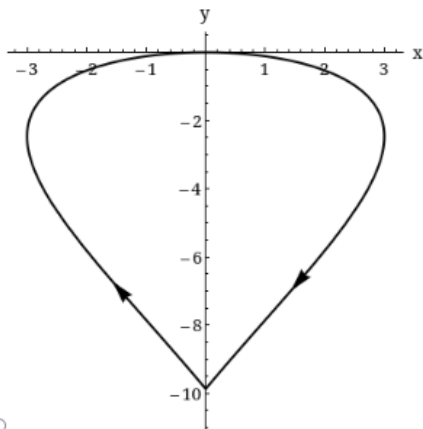
3. [-/1 Points]

DETAILS

SCALC8 10.1.507.XP.

Select the curve generated by the parametric equations. Indicate with an arrow the direction in which the curve is traced as t increases.

$$x = 3 \sin(t), \quad y = t^2, \quad -\pi \leq t \leq \pi$$



4. [-/11 Points]

DETAILS

SCALC8 10.2.517.XP.

Consider the following.

$$x = t + \ln(t), \quad y = t - \ln(t)$$

$$\frac{dy}{dx} = \boxed{}$$

$$\frac{d^2y}{dx^2} = \boxed{}$$

For which values of t is the curve concave upward? (Enter your answer using interval notation.)

Need Help?

[Read It](#)

Show My Work (Required)

What steps or reasoning did you use? Your work counts towards your score.

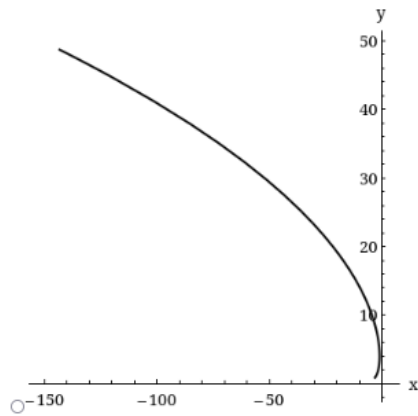
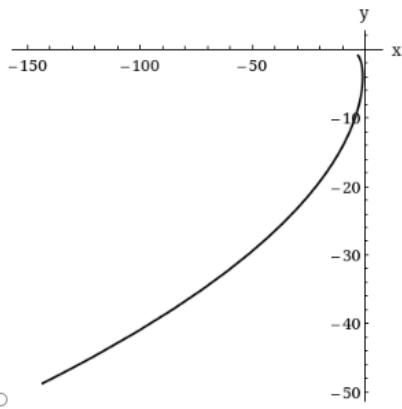
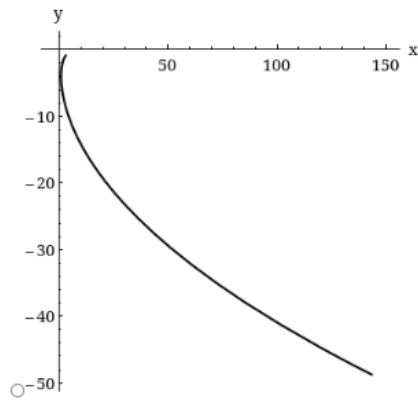
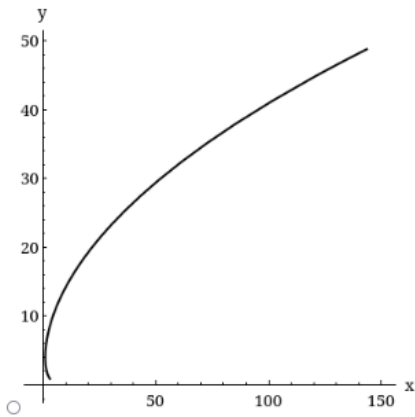
5. [-/1 Points]

DETAILS

SCALC8 10.2.524.XP.

Graph the curve.

$$x = e^t - t, \quad y = 4e^{t/2}, \quad -3 \leq t \leq 5$$



Find its length.

6. [-/1 Points]

DETAILS

SCALC8 10.3.027.

For each of the described curves, decide if the curve would be more easily given by a polar equation or a Cartesian equation. Then write an equation for the curve.

(a) A line through the origin that makes an angle of $\pi/6$ with the positive x -axis.

(b) A vertical line through the point $(5, 5)$.

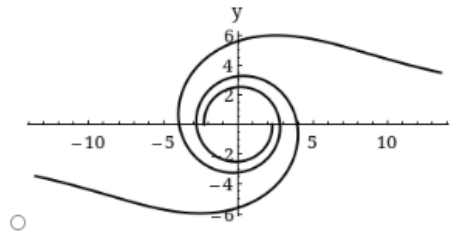
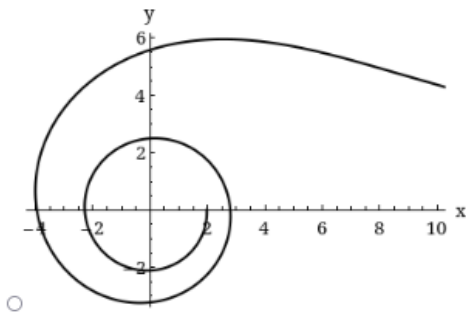
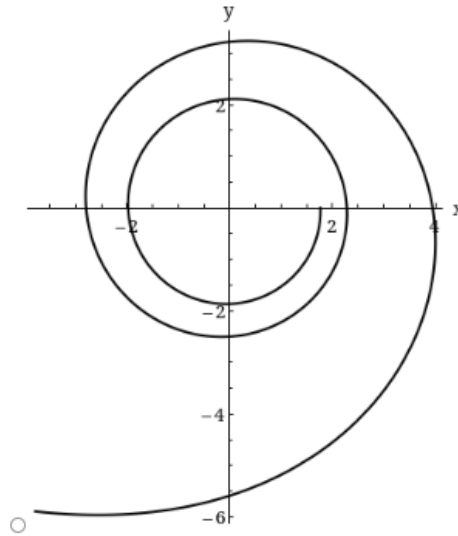
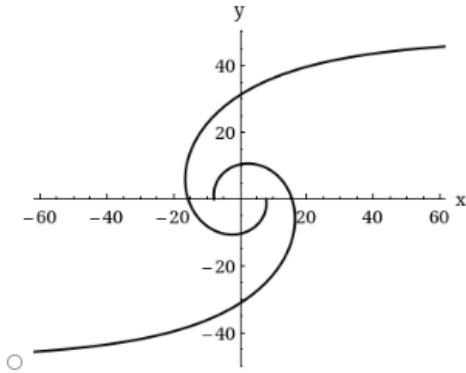
7. [-/1 Points]

DETAILS

SCALC8 10.3.044.

Sketch the curve with the given polar equation by first sketching the graph of r as a function of θ in Cartesian coordinates.

$r^2\theta = 49$

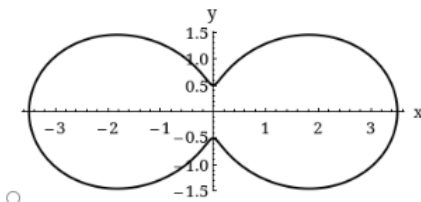
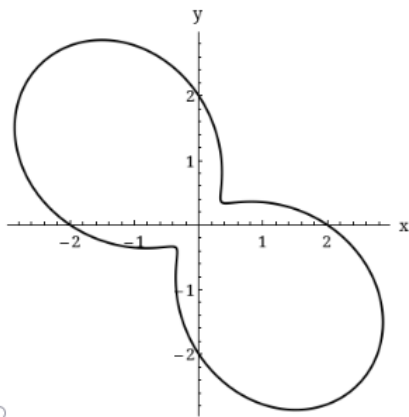
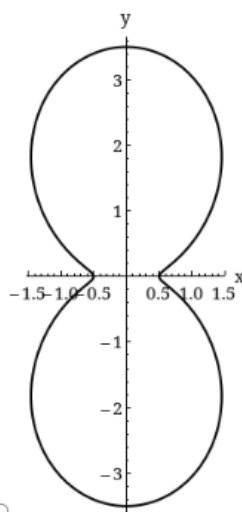
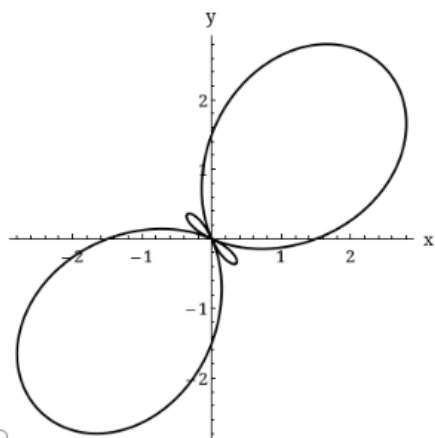
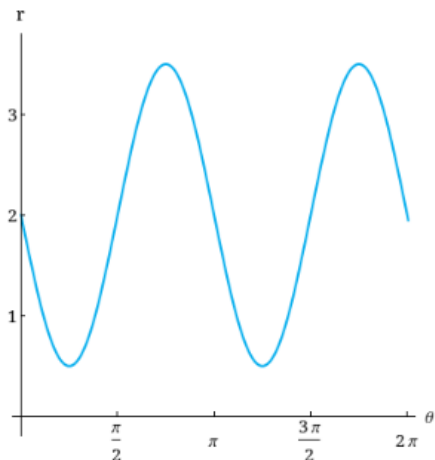


8. [-/1 Points]

DETAILS

SCALC8 10.3.047.

The figure shows the graph of r as a function of θ in Cartesian coordinates. Use it to sketch the corresponding polar curve.



9. [-/1 Points]

DETAILS

SCALC8 10.3.063.

Find the points on the given curve where the tangent line is horizontal or vertical. (Assume $0 \leq \theta < 2\pi$. Enter your answers as a comma-separated list of ordered pairs.)

$$r = 1 + \cos(\theta)$$

horizontal tangent $(r, \theta) =$

vertical tangent $(r, \theta) =$

10. [-/1 Points]

DETAILS

SCALC8 10.4.028.

Find the area of the region that lies inside the first curve and outside the second curve.

$$r = 9 \sin(\theta), \quad r = 5 - \sin(\theta)$$

11. [-/1 Points]

DETAILS

SCALC8 10.4.030.

Find the area of the region that lies inside both curves.

$$r = 9 + \cos(\theta), \quad r = 9 - \cos(\theta)$$

12. [-/1 Points]

DETAILS

SCALC8 10.4.508.XP.

Find the area of the region that is bounded by the given curve and lies in the specified sector.

$$r = \sin(\theta), \quad \pi/6 \leq \theta \leq 5\pi/6$$

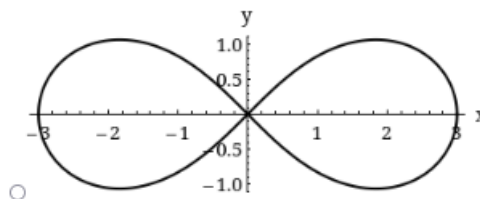
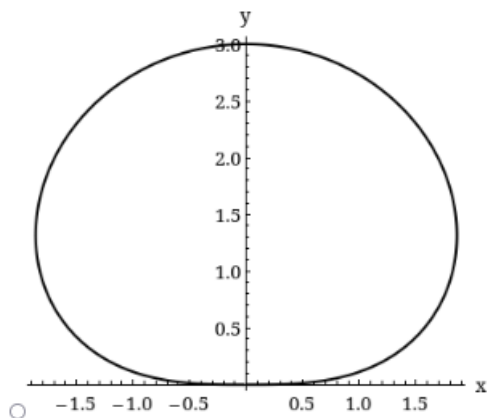
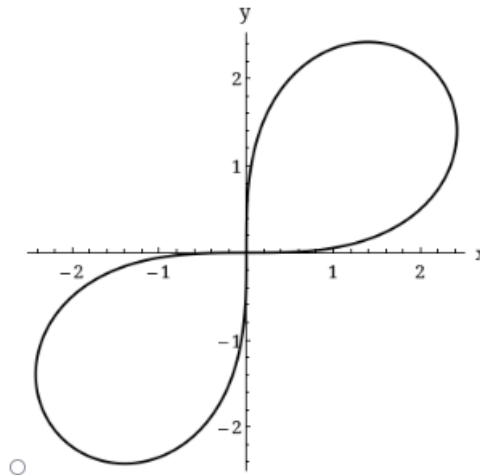
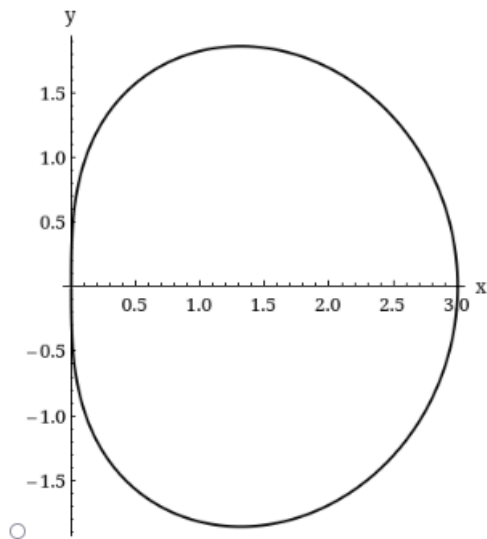
13. [-/1 Points]

DETAILS

SCALC8 10.4.511.XP.

Find the area that the curve encloses and then sketch it.

$$r^2 = 9 \cos(2\theta)$$



14. [-/1 Points]

DETAILS

SCALC8 10.5.519.XP.

Find an equation for the conic that satisfies the given conditions.

parabola, vertex $(0, 0)$, focus $(0, -3)$

15. [-/1 Points]

DETAILS

SCALC8 10.5.044.

Find an equation for the conic that satisfies the given conditions.

hyperbola, vertices $(0, \pm 3)$, foci $(0, \pm 6)$

Find the vertices and foci of the ellipse.

$$x^2 + 3y^2 + 4x - 18y + 28 = 0$$

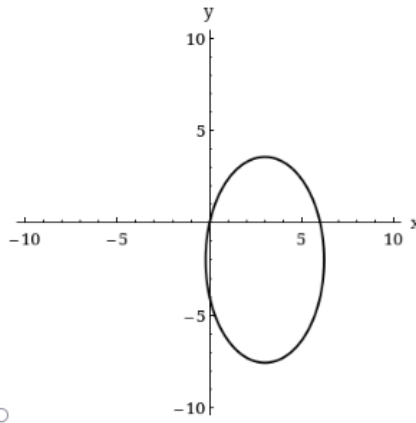
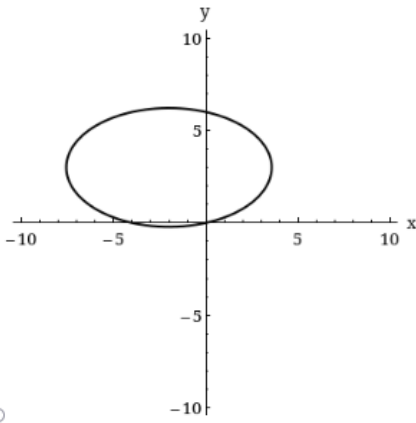
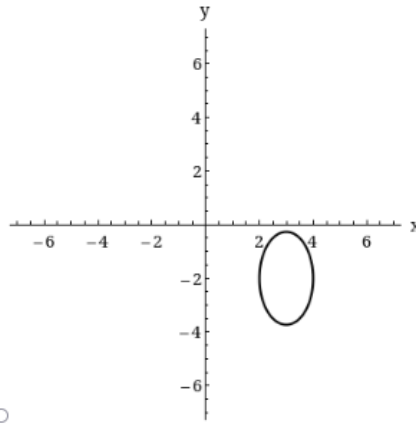
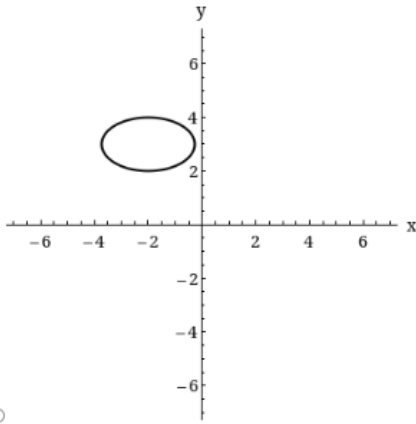
vertices $(x, y) = (\text{ } , \text{ })$ (smaller x -value)

$(x, y) = (\text{ } , \text{ })$ (larger x -value)

foci $(x, y) = (\text{ } , \text{ })$ (smaller x -value)

$(x, y) = (\text{ } , \text{ })$ (larger x -value)

Sketch its graph.



17. [-/11 Points]

DETAILS

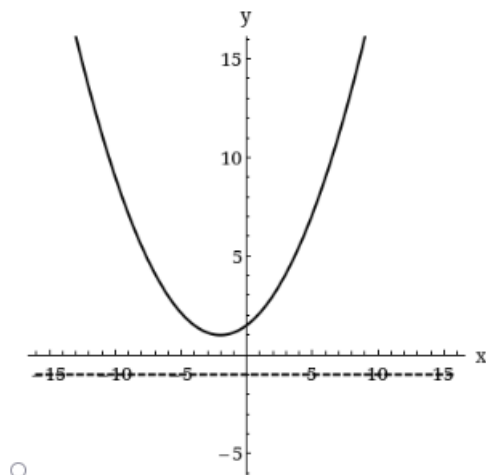
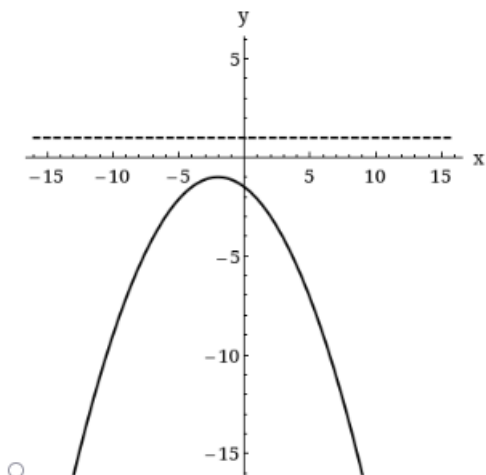
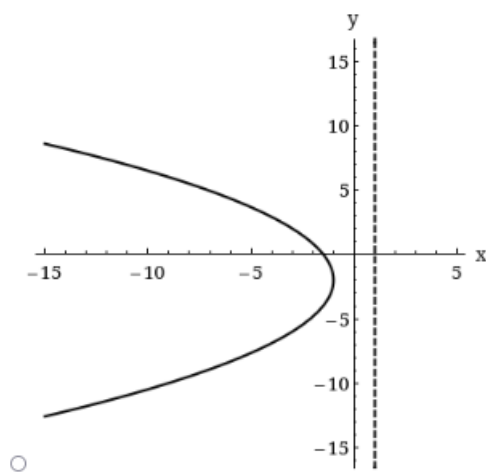
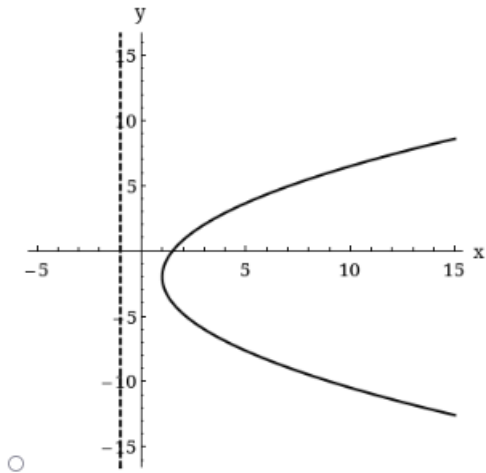
SCALC8 10.5.005.

Find the vertex, focus, and directrix of the parabola.

$$(x + 2)^2 = 8(y - 1)$$

vertex $(x, y) = (\text{ } , \text{ })$ focus $(x, y) = (\text{ } , \text{ })$ directrix $\text{ } = \text{ }$

Sketch its graph.



Show My Work (Required) ?

What steps or reasoning did you use? Your work counts towards your score.

18. [-/1 Points]

DETAILS

SCALC8 10.6.509.XP.

Write a polar equation of a conic with the focus at the origin and the given data.

hyperbola, eccentricity $3/2$, directrix $y = 6$

19. [-/1 Points]

DETAILS

SCALC8 10.6.510.XP.

Write a polar equation of a conic with the focus at the origin and the given data.

ellipse, eccentricity $4/5$, directrix $x = -4$

20. [-/1 Points]

DETAILS

SCALC8 10.6.511.XP.

Write a polar equation of a conic with the focus at the origin and the given data.

hyperbola, eccentricity 5 , directrix $y = -5$

21. [-/1 Points]

DETAILS

SCALC8 10.6.512.XP.

Consider the equation below.

$$r = \frac{6}{1 + \sin(\theta)}$$

(a) Find the eccentricity.

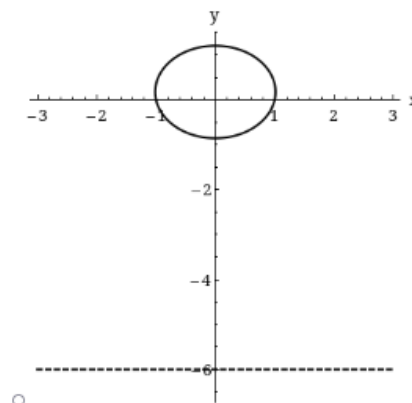
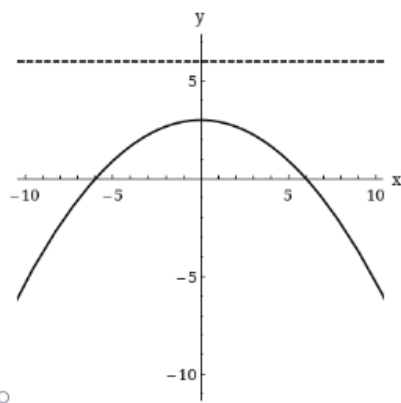
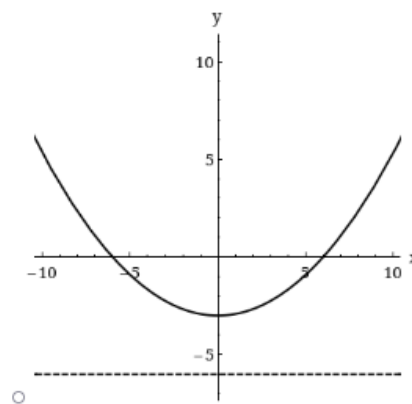
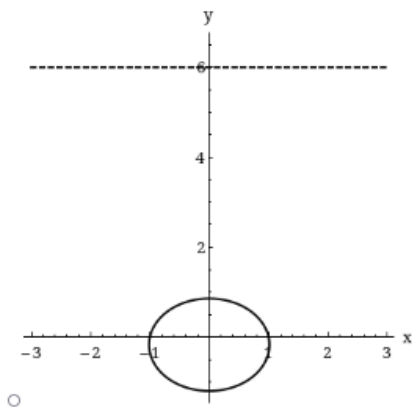
$$e = \text{[input box]}$$

(b) Identify the conic.

- ellipse
 parabola
 hyperbola
 none of the above

(c) Give an equation of the directrix (in Cartesian coordinates).

(d) Sketch the conic.



22. [-/3 Points]

DETAILS

SCALC8 10.1.033.

Find parametric equations for the path of a particle that moves along the circle $x^2 + (y - 3)^2 = 16$ in the manner described. (Enter your answer as a comma-separated list of equations. Let x and y be in terms of t .)

(a) Once around clockwise, starting at $(4, 3)$. $0 \leq t \leq 2\pi$.

(b) Two times around counterclockwise, starting at $(4, 3)$. $0 \leq t \leq 4\pi$.

(c) Halfway around counterclockwise, starting at $(0, 7)$. $0 \leq t \leq \pi$.

23. [-/1 Points]

DETAILS

SCALC8 10.2.007.

Find an equation of the tangent to the curve at the given point by both eliminating the parameter and without eliminating the parameter.

$$x = 4 + \ln(t), \quad y = t^2 + 1, \quad (4, 2)$$

$y =$