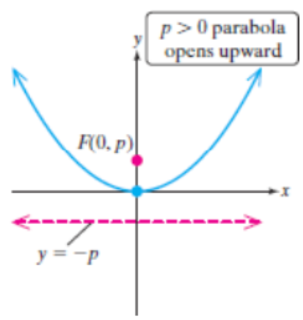
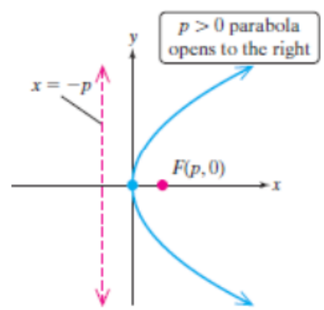
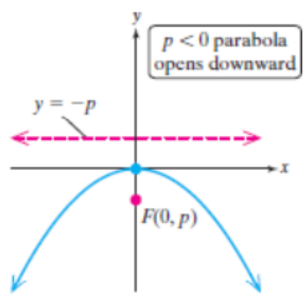
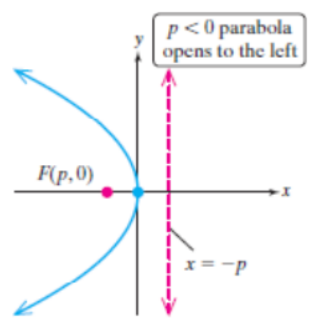
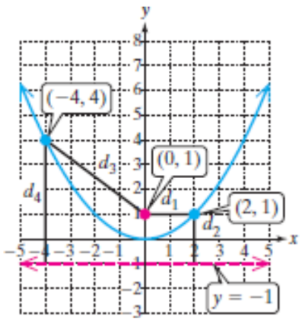
<table>
<tr><th colspan="3">Standard Forms of an Equation of a Parabola with Vertex at the Origin</th></tr>
<tr><th></th><th>Axis of Symmetry: y-axis</th><th>Axis of Symmetry: x-axis</th></tr>
<tr><td>Equation:</td><td>$x^2 = 4py$</td><td>$y^2 = 4px$</td></tr>
<tr><td>Vertex:</td><td>$(0, 0)$</td><td>$(0, 0)$</td></tr>
<tr><td>Focus:</td><td>$(0, p)$</td><td>$(p, 0)$</td></tr>
<tr><td>Directrix:</td><td>$y = -p$</td><td>$x = -p$</td></tr>
<tr><td>Axis of symmetry:</td><td>$x = 0$</td><td>$y = 0$</td></tr>
<tr><td>Graph: $(p > 0)$</td><td>
</td><td>
</td></tr>
<tr><td>Graph: $(p < 0)$</td><td>
</td><td>
</td></tr>
</table>

11.3, # 13 (extended): Consider the parabola and the points depicted below.



(a). How do the values of d_1 and d_2 compare? What about d_3 and d_4? What is the geometric reason for why?

(b). What is the equation of the parabola graphed?

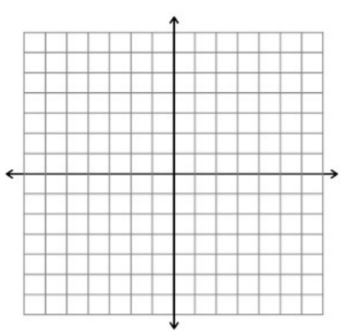
11.3, # 27: Consider the equation $x^2 = -4y$.
(a). Does the parabola open upward, downward, leftward, or rightward? Why?

(b). Identify the value of p for the parabola.

(c). Identify the focus, directrix, and focal diameter of the parabola.

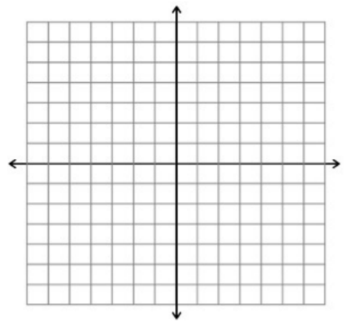
(d). Identify the endpoints of the latus rectum.

(e). Graph the parabola.



11.3, # 61: Find the equation of the parabola with vertex at the origin and directrix at $x = 4$. Then, give an equation for its axis of symmetry.

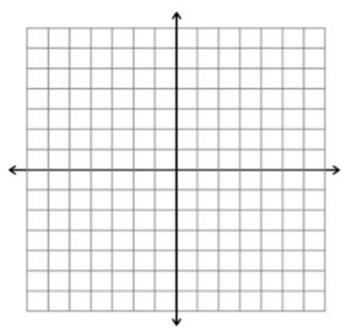
4.1, # 48: Consider the function $s(x) = \frac{2}{x-3}$.
(a). Sketch the graph, and identify any asymptotes.



(b). Is s one-to-one? If so, find the inverse of s.

(c). Identify the domain and range of s^{-1} if s^{-1} exists.

4.2, # 28: Consider the function $g(x) = 4^{x+1} + 2$.
(a). Sketch the graph, and identify any asymptotes.



(b). Give the domain and range of g.

(c). Find the inverse function of g.

4.2, # 46: Suppose that \$8000 is invested at 3.5% interest for 20 years.
(a). What is the resulting amount if the interest is compounded monthly? Leave your answer as you would plug it into your calculator.

(b). What is the resulting amount if the interest is compounded continuously? Leave your answer as you would plug it into your calculator.

(c). If compounded continuously, how long did it take for the investment to earn \$100 in interest?

Problem: Find the domain of the function $f(x) = \log_3\left(\frac{7-x}{(x+2)^2(x-3)}\right)$.

Problem: Solve the following equations:
(a). $4^{\log_4(a-5)} = 10$.

(b). $5 \cdot (4)^{2n-5} + 3 = 11$.

(c). $3^{6x+5} = 5^{2x}$.

(d). $\log_3 y + \log_3(y+6) = 3$

4.4, # 62: Combine all terms of the expression $15\log c + \log(k^2+k) - \frac{1}{4}\log d - \frac{3}{4}\log k$ into one logarithm with coefficient 1.

Problem: The half-life of ^{18}F is 110 minutes. How long does it take for a sample to decay to 70% of its original amount?

5.1, # 74: The angle $\theta = 315°$ intercepts an arc on a circle of radius 2.
(a). Find the length of the arc intercepted by the central angle θ.

(b). The arc is the boundary of a sector θ defines. Find the area of that sector.

Problem: Find all angles on $[0, 2\pi)$ where $\sin x = \frac{\sqrt{3}}{2}$.

Problem: Find all angles on $[0, 2\pi)$ where $\sin x = -\frac{1}{5}$.

5.3, #61: Find all angles on $[0, 2\pi)$ where $\tan x = -\frac{\sqrt{3}}{3}$.

Problem: Given $\cos(\alpha) = \frac{4}{5}$, $\frac{3\pi}{2} < \alpha < 2\pi$, and $\sin\beta = -\frac{5}{13}$, $\cos\beta < 0$, determine $\tan(\alpha+\beta)$.

Problem: Determine both the point on the unit circle and the unit vector determined by $\theta = \frac{5\pi}{6}$. How do they compare?

Problem: Identify the period and phase shift (relative to $y = \tan x$) for the graph of $y = -3\tan\left(4x + \frac{\pi}{2}\right)$. Then, find the domain of $y = -3\tan\left(4x + \frac{\pi}{2}\right)$.