

Chris H

subject: Math

English

time:

Mon.

3 / 16

day #:

The Circle  
Ch. 9 Lesson 1

Moby Dick  
• Pre-Reading  
Discussion

Tues.

3 / 17

day #:

Circles  
Ch. 9 Lesson 2

Moby Dick  
• Read Ch. 1-4  
• Answer Questions

Wed.

3 / 18

day #:

Ellipses  
Ch. 9 Lesson 3

Moby Dick  
• Read Ch. 5-8  
• Answer Questions

Thurs.

3 / 19

day #:

Ellipses  
Ch. 9 Lesson 4

Moby Dick  
• Read ch. 9-12  
• Answer Questions

Fri.

3 / 20

day #:

Hyperbolas  
Ch. 9 Lesson 5

Moby Dick  
• Read Ch. 13-16  
• Answer Questions



Chris H

subject: Math

English

time:

Mon.

3/30

day #:

Hyperbolas  
Ch. 9 Lesson 6

Moby Dick  
• Rd. Ch. 17-20  
• Answer Questions

Tues.

3/31

day #:

Parabolas  
Ch. 9 Lesson 7

Moby Dick  
• Rd. Ch. 21-24  
• Answer Questions

Wed.

4/1

day #:

Parabolas  
Ch. 9 Lesson 8

Moby Dick  
• Rd. Ch. 25-28  
• Answer Questions

Thurs.

4/2

day #:

Eccentricity  
Ch. 9 Lesson 9

Moby Dick  
• Rd. Ch. 29-32  
• Answer Questions

Fri.

4/3

day #:

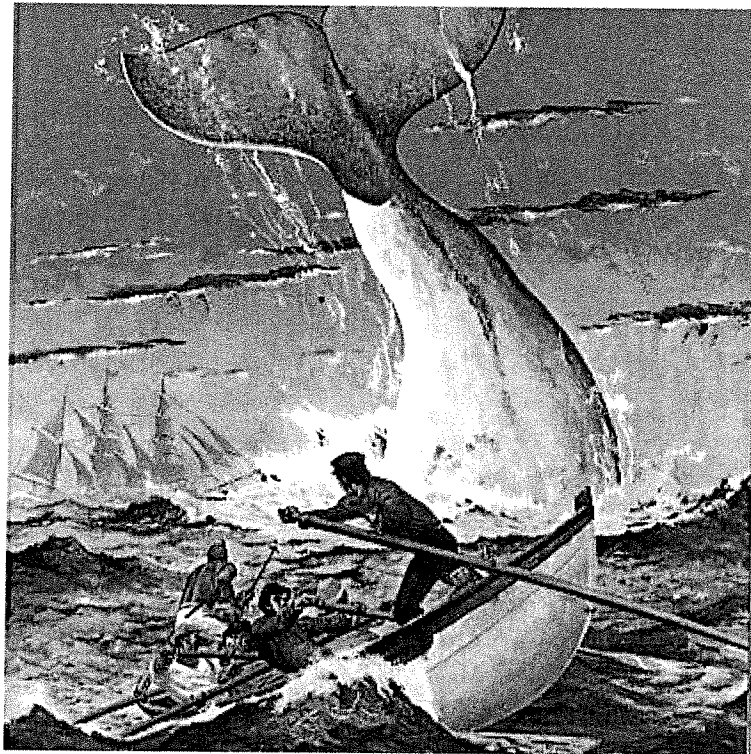
Intersections  
Ch. 9 Lesson 10

Moby Dick  
• Rd. 33-36  
• Answer Questions



# Moby Dick

By Herman Melville





## Moby Dick Pre-Reading Discussion

**Directions:** Discuss the following questions with a partner. Write down your thoughts as you both share your ideas. Be prepared to share your thoughts during class discussion time.

What do you know about whales? Have you ever seen one? Would you like to?

Have you ever been on a boat or ship? Describe your experience. If you haven't, what do you think being on a ship for a long time is like? Do you think you would enjoy it?

What could a whale symbolize in literature? What could the search for a whale symbolize?

Think about the characteristics of the ocean. What could the ocean symbolize in literature?

If you could go on an expedition, where would you go and what would you like to find out?





## **Moby Dick Reading Guide**

This reading guide is designed to help you focus on various themes and passages as you read Moby Dick. I suggest you pre-read the guide before you begin each section. The questions will help you focus your reading and formulate your own questions and thoughts in relation to the text.

### **Etymology and Extracts**

- Why does Melville begin his novel with “Etymology”?
- How do you interpret the source of “Extracts”?
- Is there an overall pattern to the extracts?
- What assumptions does Melville make about his readers?

### **Chapters 1 – 3**

- Who is the biblical Ishmael? How would you characterize Ishmael? Why does he go to sea?
- What is the symbolic relevance of the story of Narcissus?
- How does Ishmael characterize New Bedford?
- How does Ishmael describe the Spouter Inn?
- What is your first impression of Queequeg?
- What philosophical principles enable Ishmael to quell his fears before they go to sleep?

### **Chapters 4 – 6**

- What is the symbolic significance of the Counterpane?
- How do you interpret Ishmael’s dream and the supernatural hand?
- How do Ishmael’s view of Queequeg change? Why?
- How would you characterize the whaling industry?

### **Chapters 7 – 9**

- What is Ishmael’s attitude toward religion and the afterlife?
- Does Ishmael want to believe in something divine? Why, or why not?
- In what ways does whaling pervade the discourse and religion in Mapple’s church?
- How would you characterize Mapple’s faith?
- What part of the story of Jonah does Mapple leave out? Why?

### **Chapters 10 – 15**

- What effect does Queequeg have on Ishmael after the sermon?
- How does Ishmael respond to Mapple’s sermon?
- How would you characterize Ishmael’s and Queequeg’s relationship?
- Where is Kokovoko?
- What does Ishmael mean when he says, “It’s a joint-stock world”?



### **Chapters 16 – 18**

- Why does Ishmael not heed the bad omens he sees?
- Why is Ishmael in charge of selecting the ship?
- What is distinctive about the ship, Pequod?
- Who was the biblical Ahab?
- How do you interpret Peleg's characterization of Ahab as a "grand, ungodly, god-like man"?
- What is the purpose of Queequeg's fasting?
- What is a Quohog?

### **Chapters 19 – 22**

- What is the Biblical relationship between Elijah and Ahab?
- Does Ahab have a soul according to Elijah?
- Why does Ishmael pronounce Elijah "crazy" and then "in my heart, a humbug"?
- Why does Ishmael not treat the forebodings about Ahab seriously?
- How is Ishmael's second meeting with Elijah different from the first?

### **Chapters 23 – 32**

- What is Bulkington's role in the novel? Why does Ishmael call him a "demigod"?
- What happens to Bulkington?
- How does Ishmael characterize the profession of whaling?
- Why is the whale-ship Ishmael's "Yale College and my Harvard"?
- What is Starbuck's flaw?
- Why is Stubb's pipe "a sort of disinfecting agent"?
- What is an Isolato?
- How is Ahab described? What does Ishmael think of him?

### **Chapters 33 – 36**

- How do the mates proceed to supper? How do they disengage?
- Why is Flask "a butterless man"? Why does he always go hungry?
- What things do masthead standers look for?
- What happens to you while standing on the masthead?
- Why is Ishmael a lousy masthead stander?
- Why does the Platonist not spot any whales?
- How does Ahab attempt to win over Starbuck?
- How does Ahab win the men over? Why does Starbuck back down?

### **Chapters 37 – 41**

- Why is Ahab "damned in the midst of Paradise"?
- What is Starbuck's predicament?
- Why does Ishmael go along with Ahab? Is he sympathetic to Ahab?



## Introduction—The Circle

**EXAMPLE**

Write the equation of a circle with its center at  $(-2, 4)$  and a radius of  $\sqrt{6}$ .

The standard form for a circle whose center is at  $(h, k)$  is  $(x - h)^2 + (y - k)^2 = r^2$ .  
Substitute  $h = -2$ ,  $k = 4$ , and  $r = \sqrt{6}$ .

$$\begin{aligned}[x - (-2)]^2 + (y - 4)^2 &= (\sqrt{6})^2 \\(x + 2)^2 + (y - 4)^2 &= 6\end{aligned}$$

**Directions** Write the equation of the circle with the given center and radius.

1.  $(6, 4), r = 8$  \_\_\_\_\_

2.  $(-4, 3), r = 5$  \_\_\_\_\_

3.  $(-3, 3), r = 7$  \_\_\_\_\_

4.  $(5, 7), r = \sqrt{7}$  \_\_\_\_\_

5.  $(-4, -8), r = 9$  \_\_\_\_\_

**EXAMPLE**

What is the center and the radius of a circle whose equation is

$$(x - 6)^2 + (y + 4)^2 = 121?$$

Compare to standard form:  $(x - h)^2 + (y - k)^2 = r^2$

$$\begin{array}{lll}x - h = x - 6 & y - k = y + 4 & r^2 = 121 \\h = 6 & k = -4 & r = \sqrt{121} = 11\end{array}$$

Center is at  $(6, -4)$ ; radius = 11

**Directions** Give the center and radius of each circle.

6.  $(x + 2)^2 + (y - 3)^2 = 9$  \_\_\_\_\_

7.  $(x - 4)^2 + (y + 9)^2 = 10$  \_\_\_\_\_

8.  $(x + 5)^2 + (y - 5)^2 = 64$  \_\_\_\_\_

9.  $(x - 8)^2 + (y + 12)^2 = 169$  \_\_\_\_\_

10.  $(x + \frac{1}{2})^2 + (y - \frac{1}{3})^2 = \frac{16}{25}$  \_\_\_\_\_



## Completing the Square: Circles

**EXAMPLE**

Find the center and radius, then sketch the circle:  $(x - 4)^2 + (y + 3)^2 = 25$ .

Compare the equation for the circle to the standard form for a circle whose center is at  $(h, k)$ :  $(x - h)^2 + (y - k)^2 = r^2$ .

Find the circle's center and radius.

$$x - h = x - 4$$

$$h = 4$$

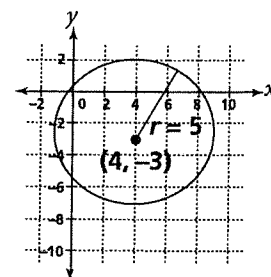
$$y - k = y + 3$$

$$k = -3$$

$$r^2 = 25$$

$$r = \sqrt{25} = 5$$

Center is at  $(4, -3)$ ; radius = 5



**Directions** Find the center and radius of each circle.

Then sketch the circle on graph paper.

1.  $x^2 + y^2 = 9$  \_\_\_\_\_

2.  $(x + 2)^2 + (y - 1)^2 = 4$  \_\_\_\_\_

3.  $(x - 3)^2 + (y + 2)^2 = 9$  \_\_\_\_\_

**EXAMPLE**

Change  $x^2 + y^2 + 6x - 8y + 9 = 0$  to standard form. Then find the center and radius.

**Step 1** Group all the  $x$ - and  $y$ -terms on the left and move constants to the right side of the equation.  $(x^2 + 6x + \underline{\hspace{1cm}}) + (y^2 - 8y + \underline{\hspace{1cm}}) = -9$

**Step 2** Complete the square for the  $x$ - and  $y$ -terms.

$$\begin{aligned} & (x^2 + 6x + [(\frac{1}{2}6)^2]) + (y^2 - 8y + [(\frac{1}{2}(-8))^2]) \\ & (x^2 + 6x + 9) + (y^2 - 8y + 16) = -9 + 9 + 16 \end{aligned}$$

Add the squared terms to both sides of the equation.

**Step 3** Factor to place in standard form:  $(x + 3)^2 + (y - 4)^2 = 16$

**Step 4** Determine the circle's center and radius.

$$x - h = x + 3$$

$$h = -3$$

$$y - k = y - 4$$

$$k = 4$$

$$r^2 = 16$$

$$r = \sqrt{16} = 4$$

Center is at  $(-3, 4)$ ; radius = 4

**Directions** Change to standard form by completing the square.

Give the center and the radius.

4.  $x^2 + y^2 - 8y = 0$  \_\_\_\_\_

5.  $x^2 + y^2 + 10x - 16y + 11 = 0$  \_\_\_\_\_





# Ellipses

**EXAMPLE**

Write  $x^2 + 4y^2 = 16$  in standard form for an ellipse with its center at  $(0, 0)$ .

Compare the equation to standard form:  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

$$x^2 + 4y^2 = 16$$

Divide each side by 16.  $\frac{x^2}{16} + \frac{y^2}{4} = 1$

**Directions** Rewrite in standard form for an ellipse with its center at  $(0, 0)$ .

1.  $9x^2 + y^2 = 9$  \_\_\_\_\_

2.  $x^2 + 25y^2 = 25$  \_\_\_\_\_

3.  $16x^2 + y^2 = 16$  \_\_\_\_\_

4.  $3x^2 + y^2 = 27$  \_\_\_\_\_

5.  $4x^2 + 2y^2 = 8$  \_\_\_\_\_

6.  $2x^2 + 8y^2 = 32$  \_\_\_\_\_

**EXAMPLE**

Sketch the ellipse  $\frac{x^2}{25} + \frac{y^2}{16} = 1$ .

**Step 1** Find vertices—the  $x$ - and  $y$ -intercepts. Compare the equation to the standard form for an ellipse with its center at  $(0, 0)$ :  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ .

Let  $y = 0$   $a^2 = 25$ ,  $a = \pm 5$ ,  $x$ -intercepts

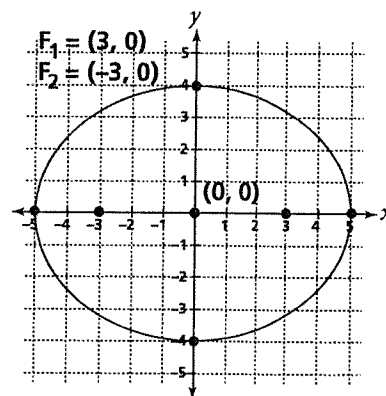
Let  $x = 0$   $b^2 = 16$ ,  $b = \pm 4$ ,  $y$ -intercepts

**Step 2** The center is at  $(0, 0)$ . Therefore, the major and minor axes lie along the  $x$ - and  $y$ -axes. Because  $a > b$ , the major axis and foci are along the  $x$ -axis and  $a^2 = b^2 + c^2$ .

$$25 = 16 + c^2$$

$9 = c^2$ ,  $c = \pm 3$ ; the foci are at  $(3, 0)$  and  $(-3, 0)$ .

**Step 3** Sketch the ellipse by plotting the  $x$ - and  $y$ -intercepts:  $(5, 0)$ ,  $(-5, 0)$ ,  $(0, 4)$ ,  $(0, -4)$ . Plot the center  $(0, 0)$ . Draw a smooth curve connecting the  $x$ - and  $y$ -intercepts.



**Directions** Give the vertices and foci of each ellipse.  
Then sketch the curve on graph paper.

7.  $\frac{x^2}{16} + \frac{y^2}{25} = 1$  \_\_\_\_\_

9.  $\frac{x^2}{9} + \frac{y^2}{4} = 1$  \_\_\_\_\_

8.  $\frac{x^2}{100} + \frac{y^2}{36} = 1$  \_\_\_\_\_

10.  $\frac{x^2}{49} + \frac{y^2}{81} = 1$  \_\_\_\_\_



## Completing the Square: Ellipses

**EXAMPLE**

Find the center, vertices, and foci of the ellipse  $\frac{(x-1)^2}{4} + \frac{(y-2)^2}{1} = 1$ . Then sketch the ellipse.

**Step 1** Find the center of the ellipse. Compare the equation to the standard form for an ellipse with its center at  $(h, k)$ :

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1.$$

$$\begin{array}{rcl} x-h & = & x-1 \\ h & = & 1 \end{array} \quad \begin{array}{rcl} y-k & = & y-2 \\ k & = & 2 \end{array}$$

The center is at  $(1, 2)$ .

Find  $a$  and  $b$ .

$$\text{Let } y = 0 \quad a^2 = 4, a = \pm 2$$

$$\text{Let } x = 0 \quad b^2 = 1, b = \pm 1$$

**Step 2** Determine the vertices.  $a > b \rightarrow$  the major axis is parallel to the  $x$ -axis, along line  $y = 2$ .

Vertices along the major axis are  $([center \pm a], 2) =$

$([1 + a], 2) \rightarrow ([1 + 2], 2) \rightarrow (3, 2)$  and

$([1 - a], 2) \rightarrow ([1 - 2], 2) \rightarrow (-1, 2)$ .

Vertices along the minor axis are  $(1, [center \pm b]) =$

$(1, [2 + b]) \rightarrow (1, [2 + 1]) \rightarrow (1, 3)$  and

$(1, [2 - b]) \rightarrow (1, [2 - 1]) \rightarrow (1, 1)$ .

**Step 3** Determine the foci.  $a > b \rightarrow$  and  $a^2 = b^2 + c^2$

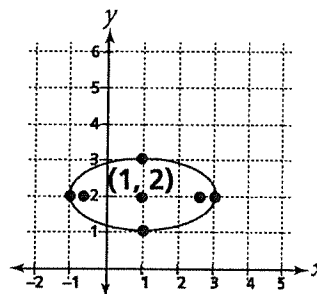
$$4 = 1 + c^2$$

$$3 = c^2, c = \pm\sqrt{3}$$

$c$  is the distance along the major axis from the center of the ellipse to a focus, so

$F_1 = ([1 + \sqrt{3}], 2)$  and  $F_2 = ([1 - \sqrt{3}], 2)$ .

**Step 4** Sketch the ellipse. First, plot the center,  $(1, 2)$ , of the ellipse. Next, plot the vertices. Connect the vertices with a smooth curve.



**Directions** Find the center, vertices, and foci of each ellipse.

Then sketch the curve on graph paper.

1.  $\frac{(x+1)^2}{49} + \frac{(y-2)^2}{36} = 1$

\_\_\_\_\_

2.  $\frac{(x+3)^2}{36} + \frac{(y-4)^2}{100} = 1$

\_\_\_\_\_

3.  $\frac{(x+2)^2}{25} + \frac{(y+4)^2}{4} = 1$

\_\_\_\_\_

4.  $\frac{(x-1)^2}{100} + \frac{(y+1)^2}{64} = 1$

\_\_\_\_\_

5.  $\frac{(x-3)^2}{36} + \frac{(y+2)^2}{25} = 1$

\_\_\_\_\_



# Hyperbolas

**EXAMPLE**

Write the equations of the asymptotes for the hyperbola

$$\frac{x^2}{64} - \frac{y^2}{36} = 1. \text{ Tell which axis contains the foci.}$$

Compare the equation to the standard form for a hyperbola with its

$$\text{center at } (0, 0): \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \rightarrow a^2 = 64, a = \pm 8; b^2 = 36, b = \pm 6$$

Foci are on the  $x$ -axis for  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ , so

the foci for  $\frac{x^2}{64} - \frac{y^2}{36} = 1$  are on the  $x$ -axis.

Asymptotes are  $y = \frac{b}{a}x$  and  $y = -\frac{b}{a}x$ , so

$$y = \frac{b}{a}x = \frac{3}{4}x \text{ and } y = -\frac{b}{a}x = -\frac{3}{4}x.$$

**Directions** Write the equations of the asymptotes for each hyperbola.

Then tell which axis contains the foci. Write  $x$ -axis or  $y$ -axis.

1.  $\frac{x^2}{25} - \frac{y^2}{9} = 1$  \_\_\_\_\_

2.  $\frac{y^2}{36} - \frac{x^2}{25} = 1$  \_\_\_\_\_

3.  $\frac{y^2}{169} - \frac{x^2}{144} = 1$  \_\_\_\_\_

4.  $\frac{x^2}{49} - \frac{y^2}{16} = 1$  \_\_\_\_\_

5.  $\frac{x^2}{9} - \frac{y^2}{4} = 1$  \_\_\_\_\_

6.  $\frac{y^2}{36} - \frac{x^2}{4} = 1$  \_\_\_\_\_

**EXAMPLE**

Sketch the hyperbola  $\frac{x^2}{16} - \frac{y^2}{9} = 1$ . Find the center, vertices, asymptotes, and foci.

**Step 1** Find the center and vertices. Compare to the standard

form for a hyperbola with its center at  $(0, 0)$ :  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ .

The center is at  $(0, 0)$ . To find the vertices, solve for  $a$  and  $b$ .

$$a^2 = 16, a = \pm 4; b^2 = 9, b = \pm 3$$

When  $x = 0$ ,  $y$  is imaginary, therefore the vertices are the  $x$ -intercepts  $\pm a = \pm 4$ , or  $(4, 0)$  and  $(-4, 0)$ .

**Step 2** Determine the asymptotes:  $y = \frac{b}{a}x \rightarrow y = \frac{3}{4}x$  and

$$y = -\frac{b}{a}x \rightarrow y = -\frac{3}{4}x$$

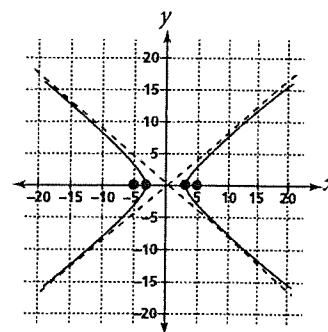
**Step 3** Find  $c$ , the distance from the center to the foci.

$$c^2 = a^2 + b^2$$

$$c^2 = 16 + 9 = 25$$

$c = \pm\sqrt{25} = \pm 5$ , so foci are at  $\pm 5$  along the  $x$ -axis:

$$F_1 = (5, 0) \text{ and } F_2 = (-5, 0).$$



**Step 4** Graph the vertices, asymptotes, and foci, then sketch the hyperbola.

**Directions** Sketch the hyperbolas. Find the center, vertices, asymptotes, and foci.

7.  $\frac{x^2}{64} - \frac{y^2}{36} = 1$

8.  $\frac{y^2}{64} - \frac{x^2}{49} = 1$

9.  $\frac{x^2}{100} - \frac{y^2}{36} = 1$

10.  $\frac{y^2}{9} - \frac{x^2}{16} = 1$



# Completing the Square: Hyperbolas

**EXAMPLE**

Given the hyperbola  $\frac{(x-2)^2}{9} - \frac{(y+3)^2}{1} = 1$ , find the center, asymptotes, vertices, and foci. Then sketch the curve.

**Step 1** Compare to the standard form:  $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ .

Solve for the hyperbola's center.

$$x - h = x - 2 \quad y - k = y + 3$$

$$h = 2 \quad k = -3 \quad \text{Center is at } (2, -3).$$

**Step 2** Determine the asymptotes:  $y = \frac{b}{a}x$  and  $y = -\frac{b}{a}x$ .

$$a^2 = 9, a = \pm 3; b^2 = 1, b = \pm 1$$

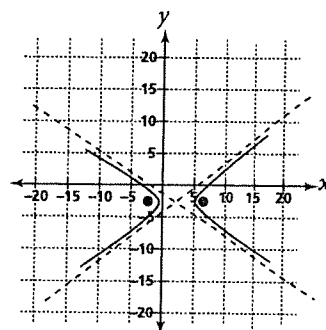
$$y = \frac{b}{a}x \rightarrow y = \frac{1}{3}x; y = -\frac{b}{a}x \rightarrow y = -\frac{1}{3}x$$

Asymptotes pass through the hyperbola's center,  $(2, -3)$ .

**Step 3** Vertices are on the line  $y = -3$  at  $([center \pm a], -3)$ :  $([2 + 3], -3)$  and  $([2 - 3], -3)$ .  
Vertices are  $(5, -3)$  and  $(-1, -3)$ .

**Step 4** Foci are on the line  $y = -3$  at a distance of  $\pm c$  from the center,  $(2, -3)$ .  $F = ([2 \pm c], -3)$ .  
 $c^2 = a^2 + b^2 = 9 + 1 = 10$ ;  $c = \pm\sqrt{10}$   
So  $F_1 = ([2 + \sqrt{10}], -3)$  and  $F_2 = ([2 - \sqrt{10}], -3)$ .

**Step 5** Sketch the curve. Plot the center first, then the asymptotes. When drawing asymptotes, use the hyperbola's center,  $(2, -3)$ , as if it were the origin. Next, mark vertices and foci.



**Directions** Find the center, asymptotes, vertices, and foci for each hyperbola.

1.  $\frac{(y-1)^2}{9} - \frac{(x+3)^2}{4} = 1$

\_\_\_\_\_

2.  $\frac{(y-3)^2}{64} - \frac{(x+2)^2}{36} = 1$

\_\_\_\_\_

3.  $\frac{(x-2)^2}{9} - \frac{(y-5)^2}{1} = 1$

\_\_\_\_\_

4.  $\frac{(x+4)^2}{16} - \frac{(y+1)^2}{36} = 1$

\_\_\_\_\_

5.  $\frac{(x+2)^2}{49} - \frac{(y-3)^2}{16} = 1$

\_\_\_\_\_





# Parabolas

**EXAMPLE**

Given the parabola  $y^2 = 16x$ , find the vertex, focus, and directrix.

Compare to standard forms:  $x^2 = 4py$  or  $y^2 = 4px$ .

$y^2 = 16x$  matches the standard form  $y^2 = 4px$ .

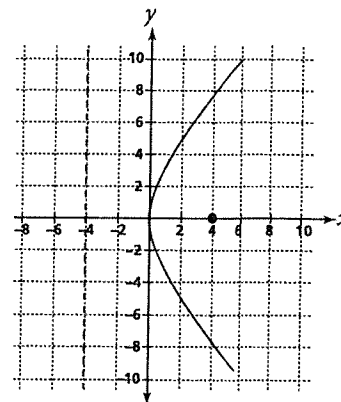
According to the definition, the vertex =  $(0, 0)$ .

$y^2 = 16x$ , and  $y^2 = 4px$ , so  $16x = 4px$  and  $p = 4$ .

By definition, the focus =  $(p, 0)$ . Substituting gives  $(4, 0)$ .

By definition, the directrix is  $x = -p$ . Substituting gives  $x = -4$ .

Sketch the graph, using the vertex, focus, and directrix as guides. This is not a function; there is more than one  $y$ -value for a single  $x$ -value.



**Directions** Find the vertex, focus, and directrix for each parabola.

Sketch the curve and tell whether the parabola is a function or not a function.

1.  $x^2 = 24y$

\_\_\_\_\_

2.  $x^2 = 8y$

\_\_\_\_\_

3.  $x^2 = -\frac{1}{2}y$

\_\_\_\_\_

4.  $y^2 = 8x$

\_\_\_\_\_

5.  $y^2 = -\frac{1}{4}x$

\_\_\_\_\_

6.  $y^2 = -2x$

\_\_\_\_\_

**EXAMPLE**

Write the equation of a parabola with focus  $(0, 20)$  and directrix  $y = -20$ .

Because the focus  $(0, 20)$  is on the  $y$ -axis, the standard form  $4py = x^2$  applies and  $(0, p)$  is defined as the focus.  $(0, p) = (0, 20) \rightarrow p = 20$ .

Substitute for  $p$  in  $4py = x^2$ ;  $4(20)y = x^2$ , or  $80y = x^2$ .

**Directions** Write the equation of each parabola.

7. Focus  $(10, 0)$ ; directrix  $x = -10$

\_\_\_\_\_

8. Focus  $(-\frac{3}{8}, 0)$ ; directrix  $x = \frac{3}{8}$

\_\_\_\_\_

9. Focus  $(0, -4)$ ; directrix  $y = 4$

\_\_\_\_\_

10. Focus  $(\frac{1}{4}, 0)$ ; directrix  $x = -\frac{1}{4}$

\_\_\_\_\_



## Completing the Square: Parabolas

**EXAMPLE**

Given  $(y - 1)^2 = -\frac{7}{8}(x - 6)$ , find the vertex, focus, and directrix for the parabola. Describe the axis of symmetry.

Compare to the standard forms:

$$(x - h)^2 = 4p(y - k) \text{ and } (y - k)^2 = 4p(x - h).$$

$$(y - 1)^2 = -\frac{7}{8}(x - 6) \text{ matches the standard form}$$

$$(y - k)^2 = 4p(x - h). \text{ Solve for } (h, k) \text{ and } p.$$

$$x - h = x - 6 \quad y - k = y - 1$$

$$h = 6 \quad k = 1 \quad \text{The vertex is at } (6, 1).$$

$$(y - k)^2 = 4p(x - h) \text{ and } (y - 1)^2 = -\frac{7}{8}(x - 6),$$

$$\text{so } -\frac{7}{8} = 4p \rightarrow p = -\frac{7}{32}$$

$$\text{By definition, the focus} = (h + p, k) \rightarrow \left(6 + \left(-\frac{7}{32}\right), 1\right)$$

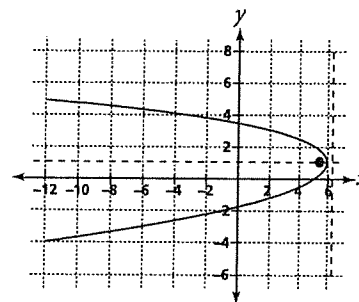
$$= \left(5\frac{25}{32}, 1\right).$$

$$\text{By definition, the directrix is } x = h - p \rightarrow x = 6 - \left(-\frac{7}{32}\right)$$

$$= 6\frac{7}{32}.$$

The axis of symmetry is parallel to the  $x$ -axis at  $y = 1$ .

Sketch the graph, using the axis of symmetry, the vertex, the directrix, and the focus as guides.



**Directions** Find the vertex, focus, and directrix for each parabola.

Describe the axis of symmetry.

1.  $(x + 3)^2 = 8(y - 2)$

\_\_\_\_\_

2.  $(x - 4)^2 = 8(y + 3)$

\_\_\_\_\_

3.  $(x + 4)^2 = 4(y + 3)$

\_\_\_\_\_

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

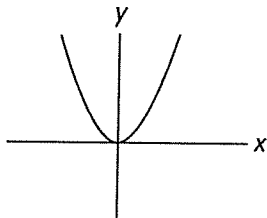
\_\_\_\_\_

5.  $(y + 1)^2 = \frac{7}{8}(x + 4)$

\_\_\_\_\_



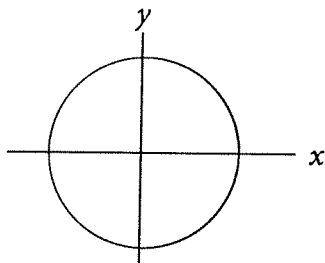
# Eccentricity

**EXAMPLE**


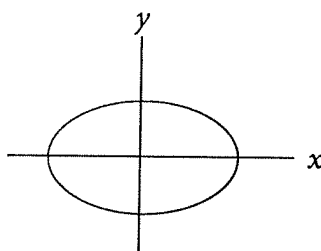
The graph is that of a parabola. Parabolas have eccentricity  $e = 1$ .

**Directions** State the eccentricity of each graph  $e = 0$ ,  $0 < e < 1$ ,  $e = 1$ , or  $e > 1$ .

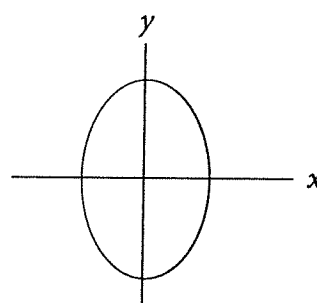
1. \_\_\_\_\_



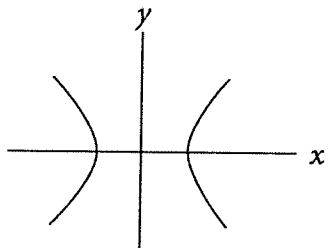
3. \_\_\_\_\_



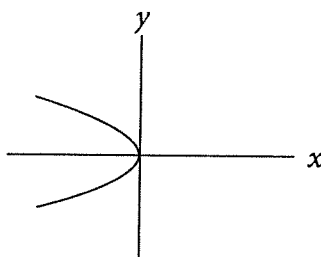
5. \_\_\_\_\_



2. \_\_\_\_\_



4. \_\_\_\_\_



**Directions** Give the eccentricity of the graph of the equation. (Do not graph.) Write  $e = 0$ ,  $0 < e < 1$ ,  $e = 1$ , or  $e > 1$ .

6.  $(y - 9)^2 = 16x$

\_\_\_\_\_

7.  $\frac{(x - 4)^2}{36} + \frac{(y + 6)^2}{81} = 1$

\_\_\_\_\_

8.  $(x - 4)^2 + (y + 6)^2 = 81$

\_\_\_\_\_

9.  $\frac{(x - 4)^2}{36} - \frac{(y + 6)^2}{1} = 1$

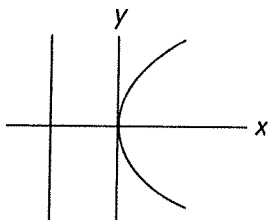
\_\_\_\_\_

10.  $(y - 2)^2 = -32(x + 6)$

\_\_\_\_\_



## Geometry Connection: Intersections

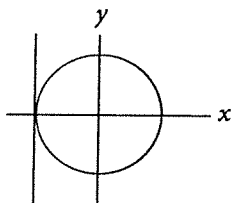
**EXAMPLE**


No common solutions. The parabola and straight line will not meet.

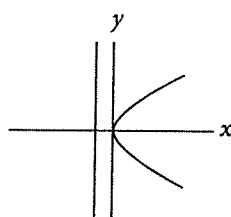
**Directions** Tell if the graphs have common solutions.

Give reasons for your answer.

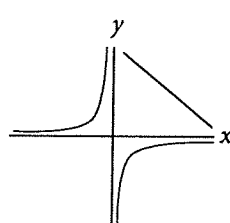
1. \_\_\_\_\_



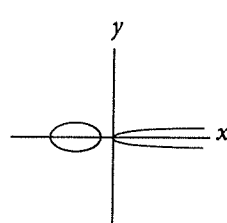
5. \_\_\_\_\_



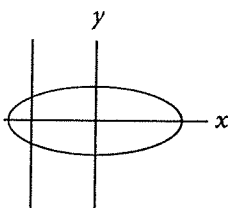
9. \_\_\_\_\_



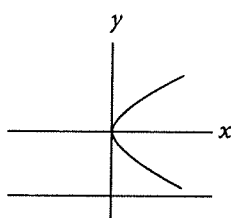
13. \_\_\_\_\_



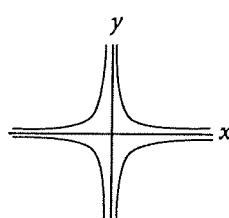
2. \_\_\_\_\_



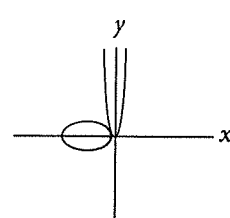
6. \_\_\_\_\_



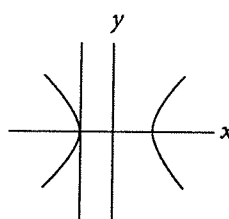
10. \_\_\_\_\_



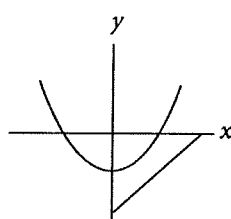
14. \_\_\_\_\_



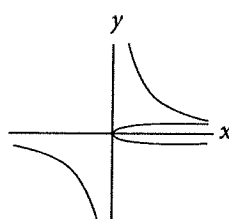
3. \_\_\_\_\_



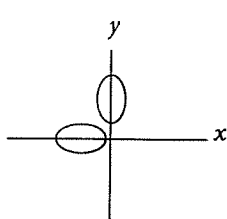
7. \_\_\_\_\_



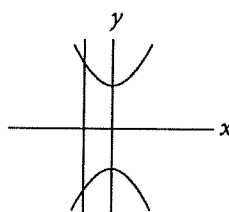
11. \_\_\_\_\_



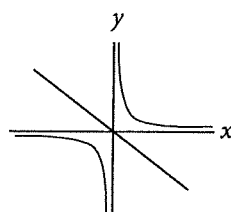
15. \_\_\_\_\_



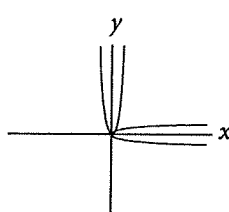
4. \_\_\_\_\_



8. \_\_\_\_\_

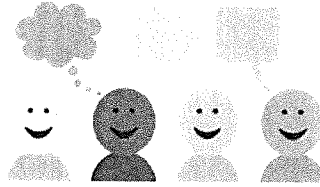


12. \_\_\_\_\_









### A note from your child's speech therapist

Hello!

Here are some ways to encourage your student's communication while school is experiencing a prolonged spring break.

Best regards to your family,

Ms. Nancy

- When watching television shows and movies, encourage conversations about the words and actions of the characters (ex., "How are the other characters feeling?" "What social rule is being broken/followed?" "What size thoughts are the other characters having?") (See Size-of-Thoughts visual attached)
- Friendly conversations are a good way to practice social skills. Encourage your student to ask you questions about your thoughts on a topic. Take turns selecting topics so your student can continue to practice engaging on topics not of their choosing.



## SMALL thoughts/feelings

Most of the time, we have very small thoughts about each other.

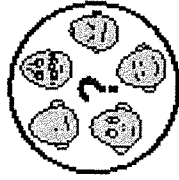
We barely notice people if they are doing behaviors that are expected across different situations.



## MEDIUM thoughts/feelings

When people's behavior attracts our attention, it is often because they are doing something that is unusual for the situation.

They can do something that is really good or they can do something that is really unexpected in a negative way for the situation.



## LARGE thoughts/feelings

When people do something that is very unexpected, we have strong uncomfortable thoughts and strong negative emotions about that person.

