

MATH 2313 Test 4

Students are responsible for reserving a seat for the test using **Schedule Exams** tab on CASA BEFORE the first day of test while seats are available. You take your test in a **CASA Testing Center**.

If you miss your scheduled test, then check the scheduler to see if there are other available times and if you can reschedule it. Your instructor does not control the scheduler, cannot add test slots, and/or reschedule your test – make sure you do not miss your reserved time.

FAQ

- ✓ **What is covered on the test?** 6.3 Chapter 7, Vectors, Chapter 8
- ✓ **How many questions are there?** About 20 Multiple-choice questions to be completed in 60 minutes.
- ✓ **What calculator can I use on exams?** No calculators or other software are allowed on exams – study accordingly.
- ✓ **Will there be a formula sheet provided?** No, not on Test 4. You canNOT have a copy of a unit circle while taking the test – make sure you **KNOW YOUR UNIT CIRCLE!**
- ✓ **How do I study for the best result?**
 1. Begin with this review. SOLVE a blank copy of this review after it is discussed in class!
This review should not be your only source while studying for the exam. It covers most of the “skills” you should be practicing, but it is not intended to be the only source.
 2. Take Practice Test 4 BEFORE your test! It is for practice AND extra credit. 5% of your best score will be added to your Test 4 score. Retake Practice Test 4 several times to strengthen your skills.
 3. Review online quizzes and homework.

1. Solve the following equation over the interval $[0, 2\pi)$:

$$2 \sin(x) - 3 = -4$$

2. Solve the following equation over the interval $[0, 2\pi)$:

$$8 \cos(x) - 5 = -1$$

3. Solve the following equation over the interval $[0, \pi)$:

$$4 \sin(2x) = 2\sqrt{2}$$

4. Solve the following equation over the interval $[0, \frac{\pi}{2})$:

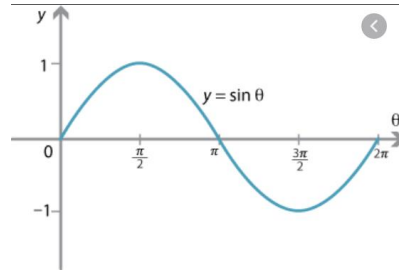
$$6 \sin(4x) = -3\sqrt{3}$$

5. Solve the following equation over the interval $[0, \frac{\pi}{2})$:

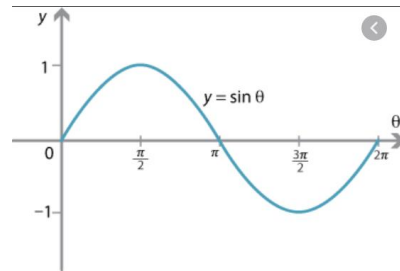
$$8 \sin^2(4x) - 1 = 1$$

6. How many solutions are there to the following equations? (Hint: You can answer this without solving the equations!)

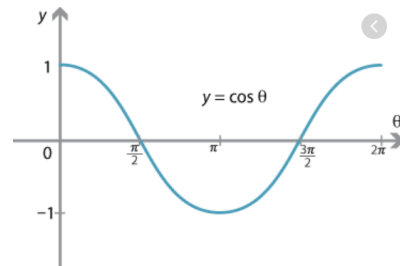
a) $4 \sin(x) = 5$ over the interval $[0, 2\pi)$.



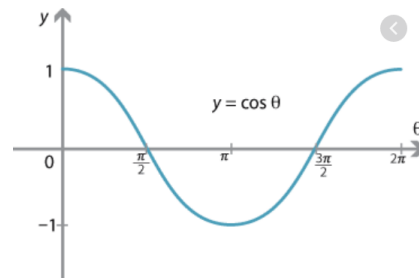
b) $5 \sin(x) = -1$ over the interval $[0, 2\pi)$.

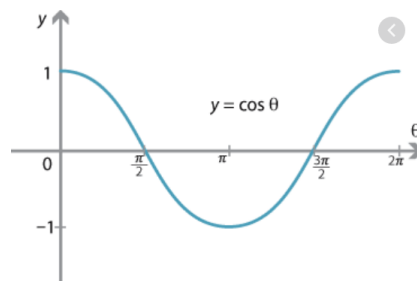


c) $5 \cos(x) + 1 = 4$ over the interval $[0, 2\pi)$.



d) $2 \cos(x) + 2 = 0$ over the interval $[0, 2\pi)$.





e) $2 \cos(x) + 4 = 4$ over the interval $[0, 2\pi)$.

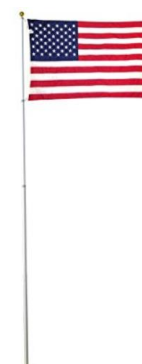
f) $2 \cos^2(x) + 1 = 2$ over the interval $[0, 2\pi)$.

g) $2 \cos^2(2x) + 1 = 2$ over the interval $[0, 2\pi)$.

h) $4 \sin^2(5x) + 2 = 3$ over the interval $[0, 2\pi)$.

7. The angle of elevation to the top of a flag pole from a point on the ground 40 feet from the base of the pole is 52° . Find the height of the flagpole.

- a) $40 \sin(52^\circ)$
- b) $40 \cos(52^\circ)$
- c) $40 \sec(52^\circ)$
- d) $40 \tan(52^\circ)$
- e) $40 \cot(52^\circ)$



8. In a right triangle ABC with right angle C, angle A measures 15° . If the hypotenuse is 20 units long, find the lengths of the legs AC and BC.

9. Find the **area** of triangle CAT if $m\angle A = 120^\circ$, $c = 6$, $t = 20$.

10. In triangle ABC , $m\angle A = 45^\circ$, $m\angle B = 30^\circ$ and $AC = 6$. Find the length of BC .

11. In triangle ABC , $m\angle A = 60^\circ$, $m\angle B = 45^\circ$ and $BC = 10$. Find the length of AC .

12. In triangle ABC , $m\angle A = 60^\circ$, $AB = 10$ and $AC = 5$. Find the length of BC .
(Hint: USE LOC)

13. In triangle ABC , $m\angle A = 30^\circ$, $AB = 4$ and $AC = 6$. Find the length of BC .
(Hint: USE LOC)

14. Let $\vec{u} = 4\vec{i} + 3\vec{j}$ and $\vec{v} = \vec{i} - 2\vec{j}$

a) Find magnitude of vector \vec{u} .

b) Find the vector $5\vec{u} - 2\vec{v}$.

15. Let $\vec{u} = \langle 2, -1 \rangle$ and $\vec{v} = \langle 5, 3 \rangle$.

a) Find the vector $2\vec{u} + 10\vec{v}$.

b) Find the dot product of these vectors: $\vec{u} \cdot \vec{v}$

CHAPTER 8

Know:

- How to identify conic sections.
- How to complete the square to get the center or vertices.
- Circles: center, radius, how to graph.
- Ellipses: center, vertices, 4 key points, how to graph.
- Parabolas: vertex, how to graph.
- Hyperbola: how to identify them.
- System: how to solve systems (algebraically or finding the number of solutions graphically)

16. Classify the following:

Choices: Circle, ellipse, hyperbola, parabola, none of the above.

$$\frac{(x - 5)^2}{4} - \frac{(y + 1)^2}{9} = 1$$

$$\frac{(x - 5)^2}{4} + \frac{(y + 1)^2}{16} = 1$$

$$(x - 5)^2 + (y + 4)^2 = 20$$

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

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

17. Write the equation of a circle with radius 4 and center $(-1, 2)$.

18. Find the center and radius of the following circle:

$$x^2 + y^2 - 8x + 4y + 11 = 0$$

19. Write the following conic section in standard form; identify it and find the center.

$$4x^2 + 25y^2 - 16x + 50y - 59 = 0$$

20. State the vertices of the following ellipses:

a)

$$\frac{x^2}{9} + \frac{y^2}{49} = 1$$

b)

$$\frac{x^2}{64} + \frac{y^2}{9} = 1$$

21. How many solutions does the following system have?

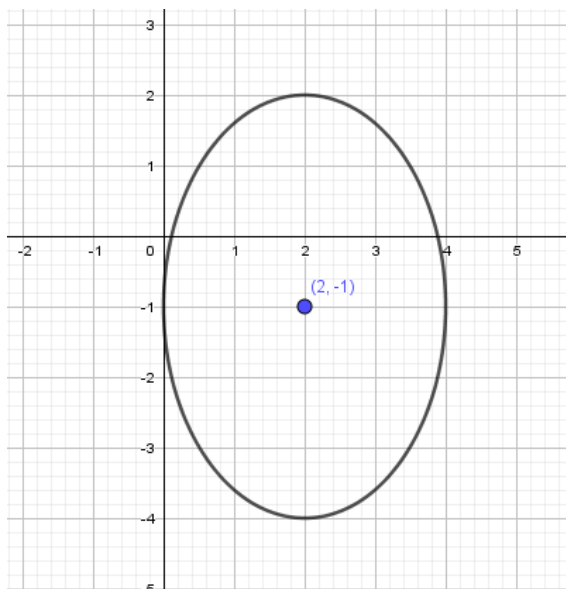
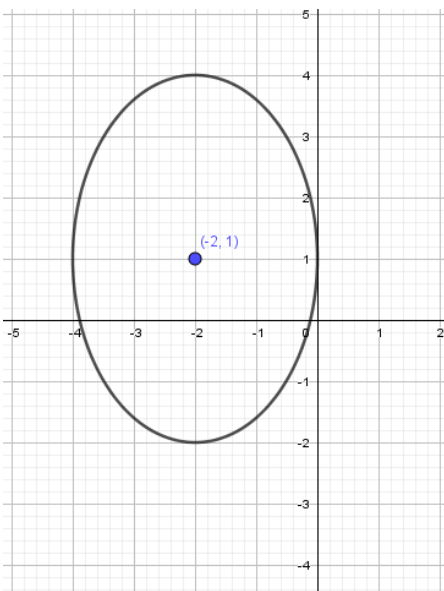
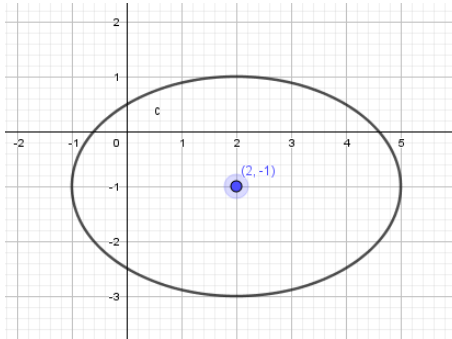
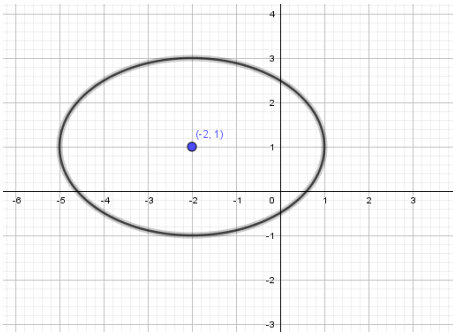
$$\begin{aligned}y &= -x + 1 \\ x &= y^2\end{aligned}$$

22. Find the point(s) of intersection:

$$\begin{aligned}4x^2 + 7y^2 &= 23 \\ 3x^2 - y^2 &= 11\end{aligned}$$

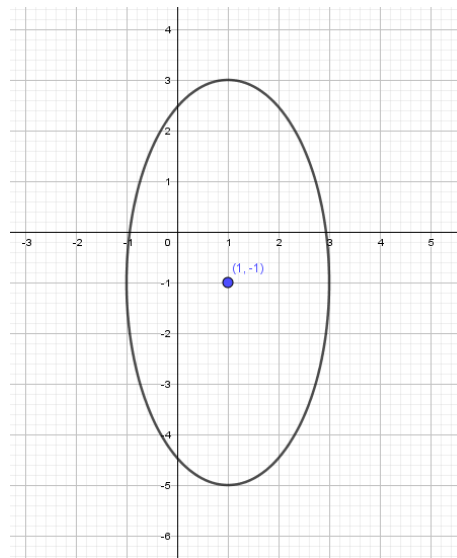
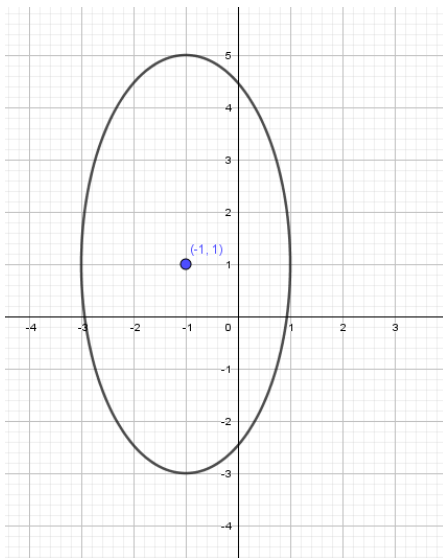
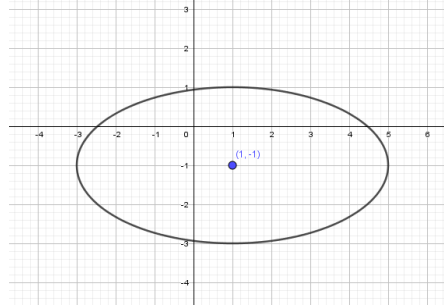
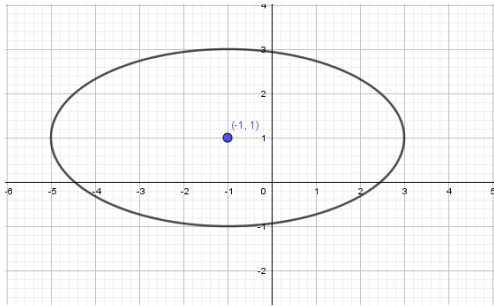
23. Which of the following is the graph of this conic section?

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

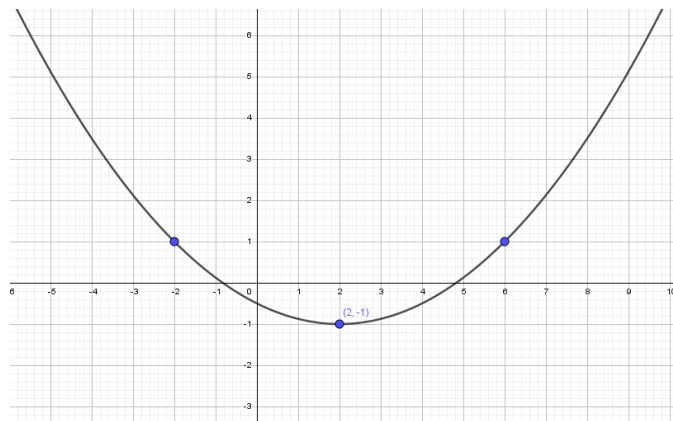
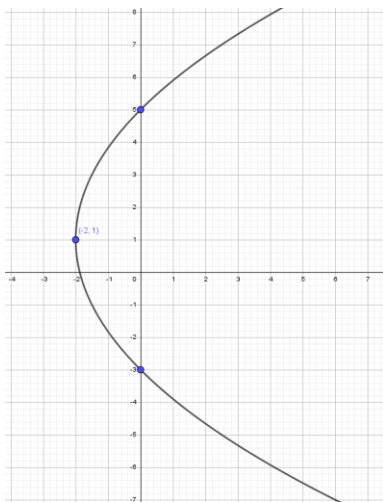
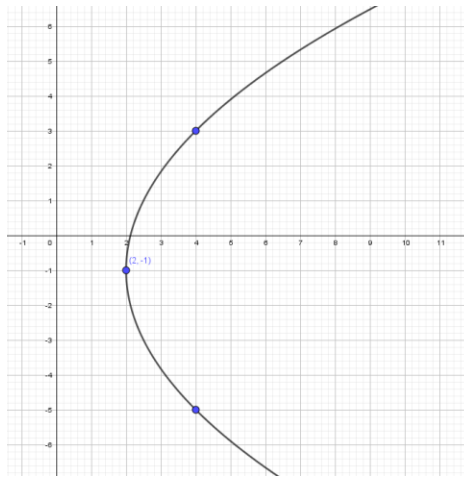
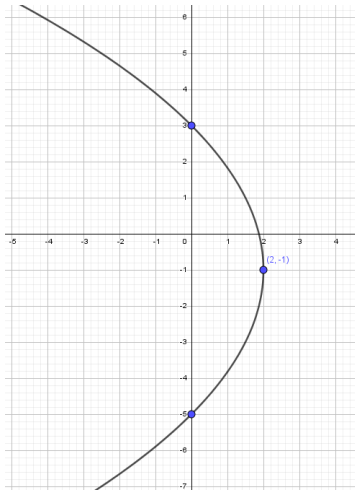


24. Which of the following is the graph of this conic section?

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



25. Which of the following is the graph of this conic section? $(y - 1)^2 = 8(x + 2)$



26. Which of the following is the graph of this conic section? $(y + 1)^2 = -12(x - 1)$

