

## Unit 1 Test Study Guide

Directions: Show all your work in order to receive full credit.

**Formulas:**

Area of a Triangle:  $A = \frac{1}{2} \cdot b \cdot h$

Area of a Parallelogram:  $A = b \cdot h$

Area of a Kite:  $A = \frac{1}{2} \cdot d_1 \cdot d_2$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Area of a Rectangle/Square:  $A = b \cdot h$

Area of a Rhombus:  $A = b \cdot h$  or  $A = \frac{1}{2} \cdot d_1 \cdot d_2$

Area of a Trapezoid:  $A = \frac{1}{2} \cdot h(b_1 + b_2)$

1. Write an equation for the line that is parallel to  $y = \frac{1}{3}x - 2$  and passes through  $(-3, 4)$ .
2. Given the line  $y = \frac{2}{3}x + 1$ , which of the following represents a line **perpendicular** to the given line **(circle all that apply)**?

A.  $y - 2 = \frac{3}{2}(x - 1)$

B.  $y + 3 = \frac{2}{3}(x + 1)$

C.  $y - 5 = -\frac{3}{2}(x - 5)$

D.  $3y = 2x - 5$

E.  $2y = -3x + 4$

F.  $4y + 6x = 0$

3. Given the line  $y = \frac{1}{2}x - 7$ , which of the following represents a line **parallel** to the given line **(circle all that apply)**?

A.  $x + 2y = 1$

B.  $x - 2y = 7$

C.  $y = 2x + 7$

D.  $-2y + 5 = -1(x + 3)$

E.  $2y - x = 4$

F.  $x = 3 - 2y$

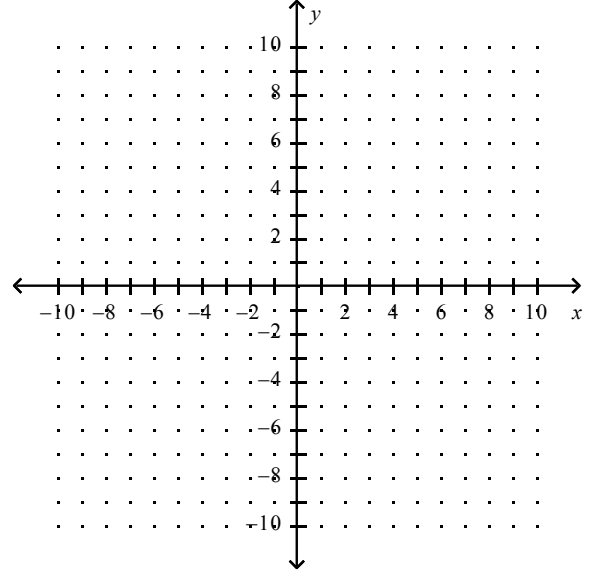
**Integrated Math III**

**Name:** \_\_\_\_\_

**Per:** \_\_\_\_\_ **Date:** \_\_\_\_\_

4. If the outside of a plot of land has the endpoints of:  $A(-3, 0)$ ,  $B(3, 2)$ ,  $C(4, -1)$ , and  $D(-2, -3)$ , complete the following:

a) Classify quadrilateral ABCD. Justify your reasoning using the **slope** AND **distance** formulas.



b) Determine the perimeter of the quadrilateral above.

c) Determine the area of the figure

5. Two points that lie at  $(3, 4)$  and  $(27, y)$  are 25 units apart. Find all possible values of  $y$ . Show evidence to support your work.

6. Given the equation of a circle is  $(x + 1)^2 + (y - 3)^2 = 25$ , which of the following are true **(circle all the apply)**

- A. The point  $(-1, -2)$  lies on the circle
- B. The center is  $(1, 3)$
- C. The diameter is 5
- D. The radius is 5
- E. Area =  $10\pi$
- F. Circumference =  $10\pi$

7. Convert the equation from general form to standard form, then label the center and radius:

$$x^2 + y^2 - 10y + 12x + 52 = 0$$

Center: \_\_\_\_\_

Radius: \_\_\_\_\_

8. For each equation below, fill in the blanks corresponding to key graph features and sketch a graph of the equation that includes those key features.

a)  $(y - 1)^2 = -12(x + 2)$

Vertex: \_\_\_\_\_

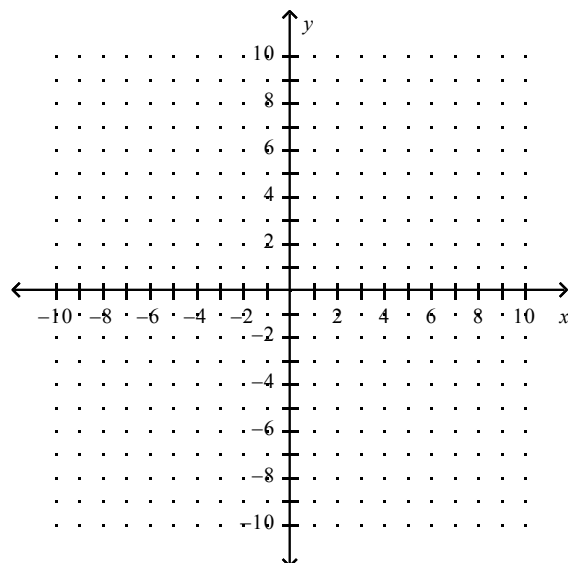
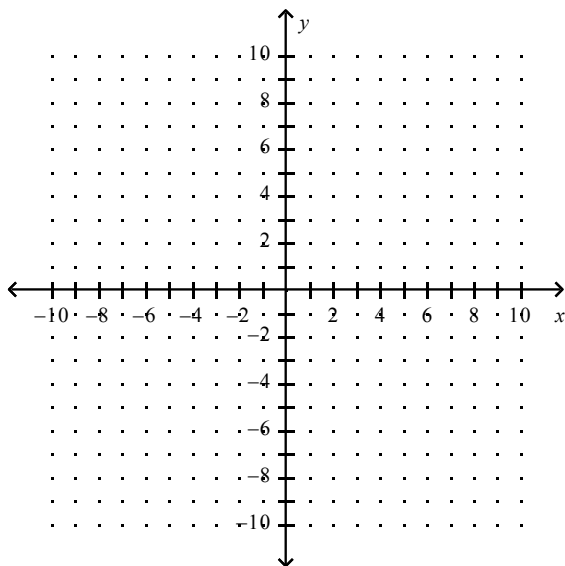
Focus: \_\_\_\_\_

Directrix: \_\_\_\_\_

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

Center: \_\_\_\_\_

Radius: \_\_\_\_\_

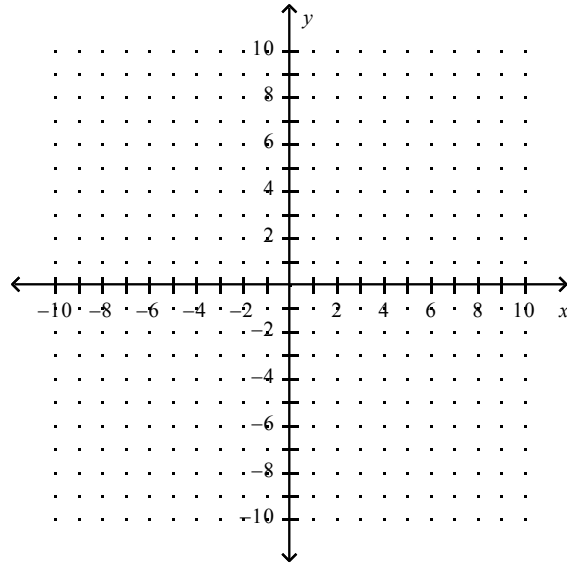


c)  $(x + 2)^2 = 4(y - 3)$

Vertex: \_\_\_\_\_

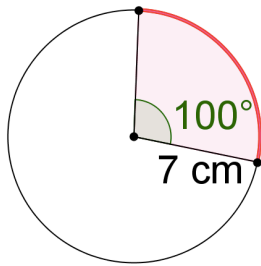
Focus: \_\_\_\_\_

Directrix: \_\_\_\_\_



9. Find the length of the arc for each of the following circles. Give your solution as an exact value and as a decimal approximation.

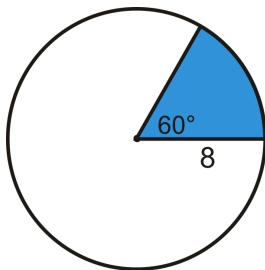
a)



b) A  $75^\circ$  arc of a circle with a diameter of 20 cm.

10. Find the area of the sectors below. Give your solution as an exact value and as a decimal approximation.

a)



b) A  $120^\circ$  arc of a circle with a radius of 12 m.

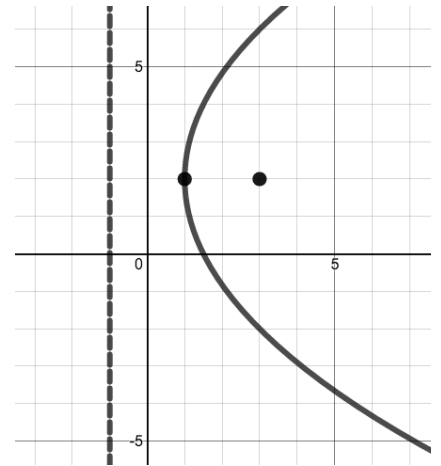
11. Write the equation of the parabola shown in the image below:

Focus:

Directrix:

P-value:

Equation:



12. Write the equation of the parabola shown in the image below:

Focus:

Directrix:

P-value:

Equation:

