



## Gateway Quiz College Algebra Practice Final

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### Problem 1. (1 point)

Solve the following system of equations.

$$4x^2 + 2y^2 = 48$$

$$5x^2 - 5y^2 = -60$$

Solution(s):

- Enter your answers as points:  $(x, y)$
- Because these systems are non-linear, you may have more than one solution.
- If you have more than one solution, enter your answers as a list of points:  $(x_0, y_0), (x_1, y_1)$
- Use 'sqrt(...)' to enter radical answers, do not use decimal approximations.

preview answers

### Problem 2. (1 point)

Rewrite the equation for this circle in Standard Form:

$$x^2 - 12x + y^2 - 16y + 91 = 0$$

Standard Form:  =

Center:

Radius:

List 4 points on the circle.

- Do not use decimal approximations.
- Enter radicals such as  $\sqrt{15}$  as 'sqrt(15)' instead of using rational exponents.
- You do not need to reduce your radicals for this problem.

**Note:** You can earn partial credit on this problem.

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### Problem 3. (1 point)

List the solutions of the equation:  $0 = -7x^2 - 11x + 8$

$x =$

- Your answers must be in exact form, do not give their decimal values.
- Separate multiple roots with a comma.

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### Problem 4. (1 point)

Consider the equation  $y = -(2x^2 + 24x + 64)$

- You must enter all of your answers as points.
- Use commas to separate multiple answers.

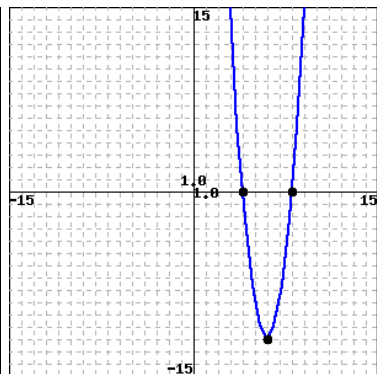
a. The  $x$ -intercepts of the parabola are:

b. The  $y$ -intercept of the parabola is:

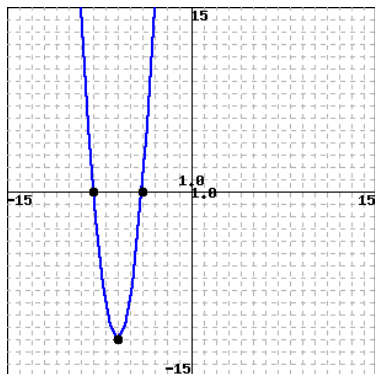
c. The vertex of the parabola is:

d. Which of these is the correct graph of  $y = -(2x^2 + 24x + 64)$ ?  ?

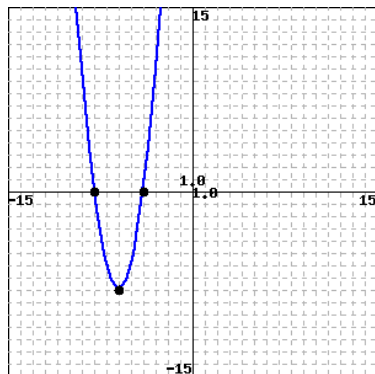
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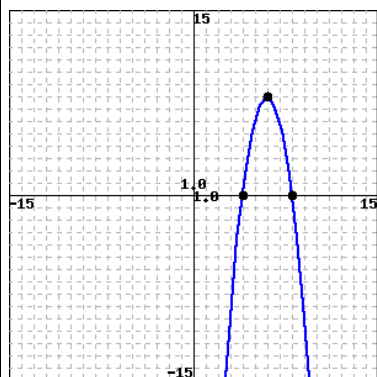
Graph A



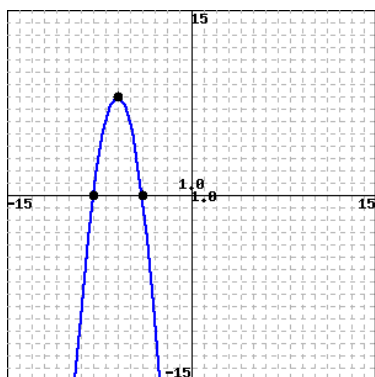
Graph B



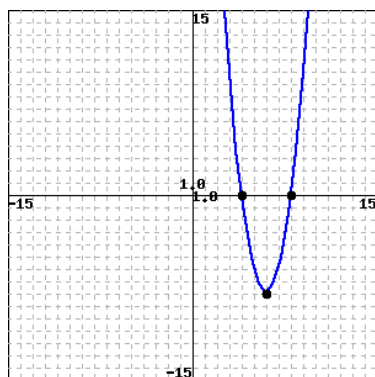
Graph C



Graph D



Graph E



Graph F

**Note:** You can earn partial credit on this problem.

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**Problem 5. (1 point)**

Simplify the complex fraction:

$$\frac{\frac{4}{y^2} + \frac{1}{y}}{\frac{16}{y^2} - 1}$$



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**Problem 6. (1 point)**

Consider the exponential equation.

$$6^x = 1301$$

a. Find  $x$  in exact form:  $x =$

b. Approximate  $x$ , correct to at least 3 decimal places:  $x =$

**Note:** You can earn partial credit on this problem.

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**Problem 7. (1 point)**

Consider the angle  $\theta = \frac{-7\pi}{6}$ .

a. To which quadrant does  $\theta$  belong? (Write your answer as a numerical value.)

b. Find the reference angle for  $\theta$  in radians.

c. Find the point where  $\theta$  intersects the unit circle.

**Note:** You can earn partial credit on this problem.

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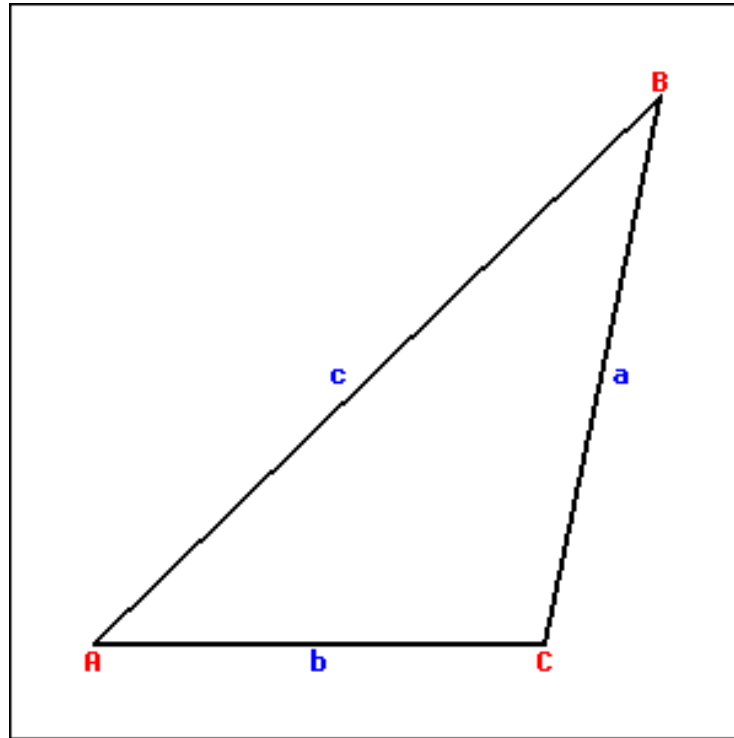
**Problem 8. (1 point)**

A bird is sitting on top of a statue. From a point that is 49 feet away from the statue, the angle of elevation is measured to be  $17^\circ$ . Find the height of the statue.

Your answer is  feet. Round your answer to the nearest whole number.

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**Problem 9. (1 point)**



Finish solving the triangle:

$$\angle A = 44^\circ$$

$$a = \boxed{\phantom{00}}$$

$$\angle B = 34^\circ$$

$$b = \boxed{\phantom{00}}$$

$$\angle C = \boxed{\phantom{00}} \text{ degrees}$$

$$c = 13$$

- Enter your answer as a decimal value.
- You must be accurate to at least 3 decimal places.
- Note that for these problems, we are using degrees to measure angles. Make sure your calculator is set to degrees instead of radians.

**Note:** You can earn partial credit on this problem.

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**Problem 10. (1 point)**

Find the all solutions of this equation in the interval  $[0, 2\pi)$ :

$$\sqrt{3} \tan(x) - 1 = 0$$

x =

- Give your answers in radians.
- Do not use decimal approximations. Use 'pi' to represent  $\pi$ .
- Use commas to separate your answers.

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**Problem 11. (1 point)**

Evaluate the logarithm without using a calculator  $\log_2(8\sqrt[6]{2})$ .

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**Problem 12. (1 point)**

Prove the identity:  $\frac{1}{\cos x} - \frac{1}{\sec x} = \tan x \cdot \sin x$

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**Problem 13. (1 point)**

Solve for x:

$$\frac{30}{x} - \frac{30}{x+8} = \frac{6}{x}$$

x =

preview answers

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Preview Test

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