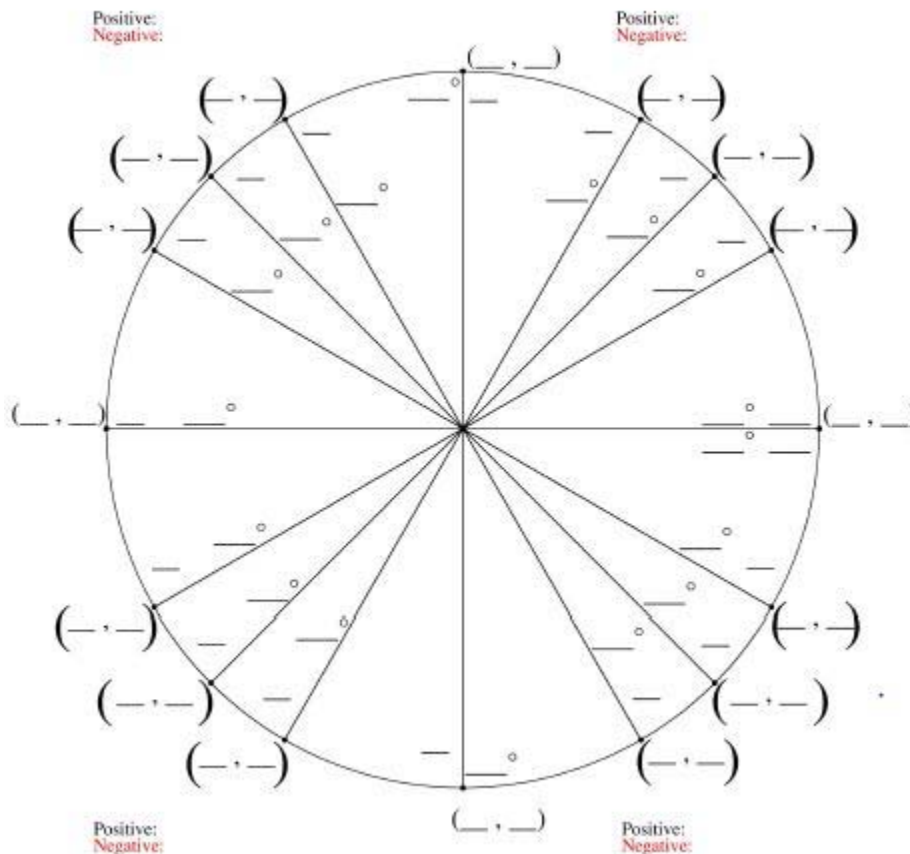


## 2016-2017 UCS Accelerated Algebra II Semester 2 Exam Review-Part A

### Short Answer

1. Write the formulas for compound interest and continuously compounded interest.
2. Write all the properties of logarithms (product, quotient, and power).
3. Write the Law of Sines and the Law of Cosines.
4. Write the trigonometric formula used to find area of a triangle.
5. Fill out a unit circle with degrees, radians, and exact values.



6. Write all three Pythagorean Identities.
7. Write all six Reciprocal Identities.
8. Write all formulas needed for parabolas (including directrix and focus).
9. Write all formulas needed for ellipses and hyperbolas, using  $h$  and  $k$ , (including their associated Pythagorean Theorem formulas).
10. Write the formula needed for circles, using  $h$  and  $k$ .
11. Write an exponential function  $y = ab^x$  for a graph that includes  $(1, 15)$  and  $(0, 6)$ .

**Write the expression as a single logarithm.**

12.  $\log_3 4 - \log_3 2$
13.  $4 \log x - 6 \log (x + 2)$

**Expand the logarithmic expression.**

14.  $\log_7 \frac{p}{2}$
15.  $\log_3 11p^3$
16.  $\log_8 \sqrt{\frac{57}{74}}$
17. Solve  $\frac{1}{16} = 64^{4x-3}$ .
18. Solve  $2^{2x} = 90$ . Round to the nearest ten-thousandth.
19. Solve  $125^{9x-2} = 150$ .
20. Solve  $5^{4x} = 2115$ . Round to the nearest hundredth.
21. Solve  $\log(4x + 10) = 3$ .
22. Solve  $3 \log 2x = 4$ . Round to the nearest ten-thousandth.
23. Solve  $\log 3x + \log 9 = 0$ . Round to the nearest hundredth if necessary.
24. Solve  $2 \log 4 - \log 3 + 2 \log x - 4 = 0$ .
25. Solve  $\ln(2x - 1) = 8$ . Round to the nearest thousandth.
26. Solve  $\ln x - \ln 6 = 0$ .

**Use natural logarithms to solve the equation. Round to the nearest thousandth.**

27.  $6e^{4x} - 2 = 3$
28.  $e^x = \frac{3}{4}$
29. Calculate to the nearest hundredth of a year how long it takes for an amount of money to double if interest is compounded continuously at 6.2%. Round to the nearest tenth.
30. If Angela invests \$475 in a savings account earning 0.25% interest compounded monthly, how much will be in her account after three years?

**Simplify the trigonometric expression.**

31.  $\sec \theta \cos \theta$

32.  $\frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta}$

Use a unit circle and 30°-60°-90° triangles to find the degree measures of the angle.

33. angles whose tangent is  $\sqrt{3}$

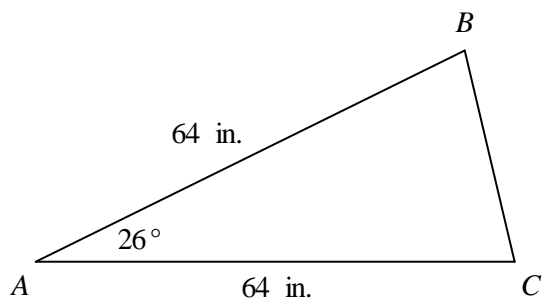
34. angles whose cosine is  $\frac{\sqrt{3}}{2}$

Solve the equation for  $0 \leq \theta < 2\pi$ . Write your answer as a multiple of  $\pi$ , if possible.

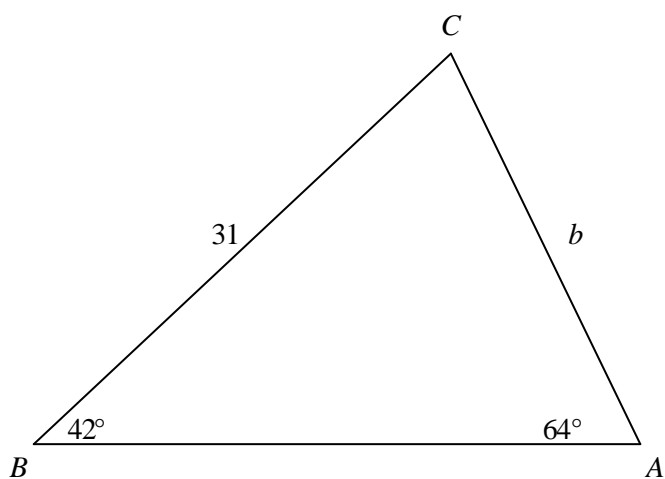
35.  $4\cos \theta + 1 = 2\cos \theta$

36.  $\cos \theta - \tan \theta \cos \theta = 0$

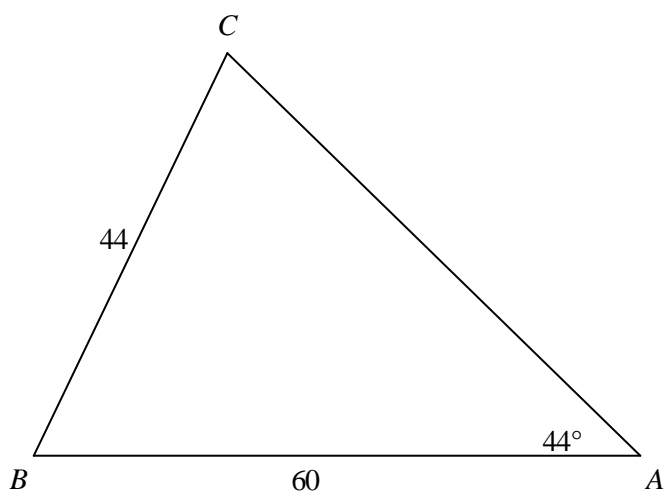
37. Find the area of the triangle. Round your answer to the nearest tenth.



38. Use the Law of Sines. Find  $b$  to the nearest tenth.



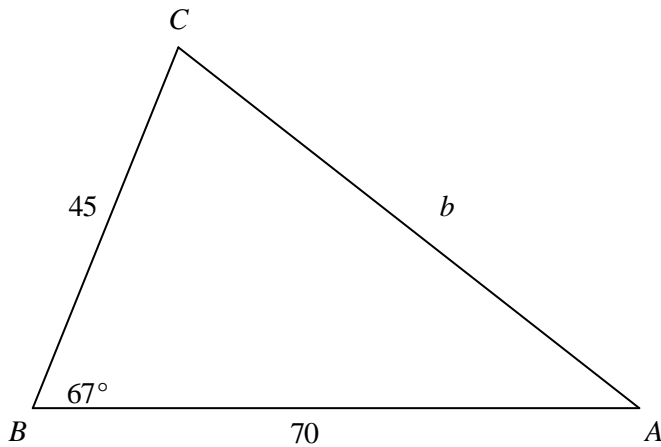
39. Use the Law of Sines. Find  $m\angle C$  to the nearest tenth.



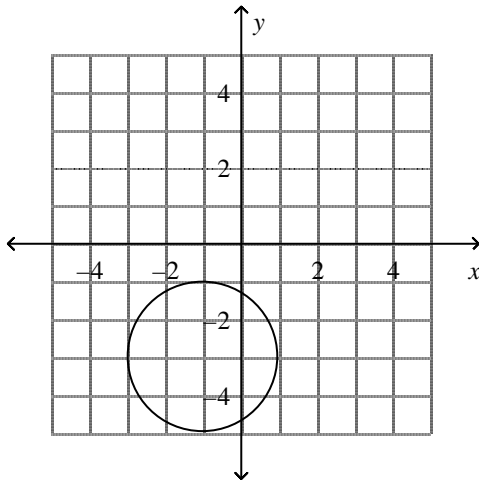
**Find the remaining sides and angles in the triangle. Round your answers to the nearest tenth.**

40.  $a = 11$ ,  $b = 12$ , and  $c = 17$

41. Use the Law of Cosines. Find  $b$  to the nearest tenth.



42. Write an equation of a parabola with a vertex at the origin and a focus at  $(-2, 0)$ .
43. Write an equation of a parabola with a vertex at the origin and a directrix at  $y = 5$ .
44. Write an equation of a circle with center  $(-5, -8)$  and radius  $2$ .
45. Write an equation in standard form for the circle.



46. Find the center and radius of the circle with equation  $(x + 7)^2 + (y + 2)^2 = 36$ .
47. Write an equation in standard form of an ellipse that has a vertex at  $(5, 0)$ , a co-vertex at  $(0, -3)$ , and is centered at the origin.
48. An elliptical track has a major axis that is  $80$  yards long and a minor axis that is  $72$  yards long. Find an equation for the track if its center is  $(0, 0)$  and the major axis is the  $x$ -axis.

**Write an equation of an ellipse in standard form with the center at the origin and with the given characteristics.**

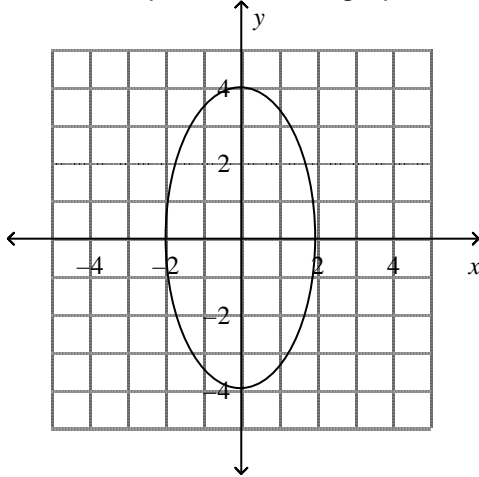
49. a vertex at  $(-5, 0)$  and a co-vertex at  $(0, 4)$

50. height of 4 units and width of 5 units

51. Find the foci of the ellipse with the equation  $\frac{x^2}{49} + \frac{y^2}{64} = 1$ . Graph the ellipse.

52. Find the foci of the ellipse with the equation  $18x^2 + 36y^2 = 648$ . Graph the ellipse.

53. Write an equation for the graph.



**Graph the conic section.**

54.  $9x^2 - 4y^2 = 36$

55. Find the equation of a hyperbola with  $a = 452$  units and  $c = 765$  units. Assume that the transverse axis is horizontal.

56. Write an equation of an ellipse with center  $(3, -3)$ , vertical major axis of length 12, and minor axis of length 6.

57. Write an equation of a hyperbola with vertices  $(3, -2)$  and  $(-9, -2)$ , and foci  $(7, -2)$  and  $(-13, -2)$ .

**Identify the conic section. If it is a parabola, give the vertex. If it is a circle, give the center and radius. If it is an ellipse or a hyperbola, give the center and foci.**

58.  $5x^2 + 11y^2 - 40x - 66y + 124 = 0$

59.  $y^2 - 4x + 6y + 29 = 0$

60.  $8x^2 - 6y^2 + 48x - 24y + 0 = 0$

61.  $x^2 + y^2 + 8x - 4y = -11$