Spring Semester Exam Review 2009 Name: _____

Date: _____

1. Determine the quadrant in which the angle lies. (The angle measure is given in radians.)

$\frac{2\pi}{3}$

2. Determine the quadrant in which the angle lies.

$-235°$

3. Rewrite the given angle in radian measure as a multiple of π. (Do not use a calculator.)

$-135°$

4. Convert the given angle measure from degrees to radians. Round to three decimal places.

-60.5°

5. Evaluate.

$\sin\left(-\frac{17\pi}{3}\right)$

6. Evaluate.

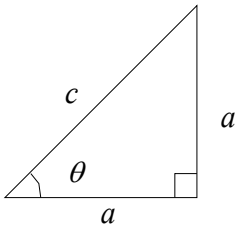
$\cos\left(\frac{13\pi}{3}\right)$

7. Use a calculator to evaluate the trigonometric function. Round your answer to four decimal places. (Be sure the calculator is set in the correct angle mode.)

$\cos\frac{-\pi}{18}$

8. Find the exact value of the given trigonometric function. (Use the Pythagorean Theorem to find the third side of the triangle.)

Find: $\tan\theta$



$a = 8$

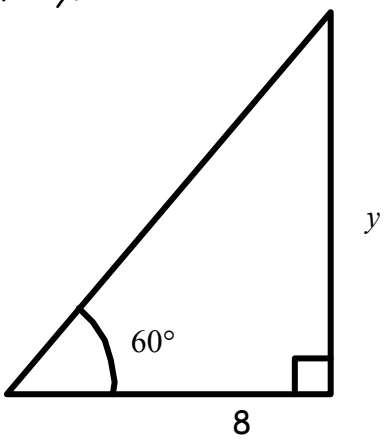
9. Given that $\sin\theta = \frac{6}{7}$, find $\sec\theta$.

[Hint: Sketch a right triangle corresponding to the trigonometric function of the acute angle θ, then use the Pythagorean Theorem to determine the third side.]

10. Use a calculator to evaluate the function. Round your answers to four decimal places. (Be sure the calculator is in the correct angle mode.)

$\sin 59.7°$

11. Solve for *y*.



12. State the quadrant in which θ lies.

$\sin(\theta) < 0$ and $\cos(\theta) > 0$

13. Find the reference angle for the given angle.

$\theta = 179°$

14. Find the reference angle for the given angle.

$\theta = \frac{5\pi}{3}$

15. Evaluate.

$\sin\left(\frac{7\pi}{4}\right)$

16. Evaluate the cosine of the angle without using a calculator.

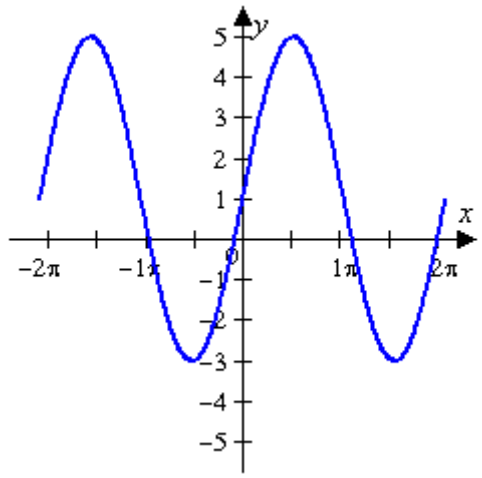
$\cos\left(\frac{2\pi}{3}\right)$

17. Find two solutions of the equation in the interval $[0°, 360°)$. Give your answers in degrees.

$\sec\theta = -\frac{2\sqrt{3}}{3}$

18. Determine the amplitude of $y = -4\cos\left(\frac{x}{11} + \frac{\pi}{5}\right)$.

19. Find *a* and *d* for the function $f(x) = a\sin x + d$ such that the graph of $f(x)$ matches the graph below.



20. The angle of elevation of the sun is $27°$. Find the length, *l*, of a shadow cast by a tree that is 47 feet tall. Round answer to two decimal places.

21. Solve the following equation.

$2\sin x - 1 = 0$

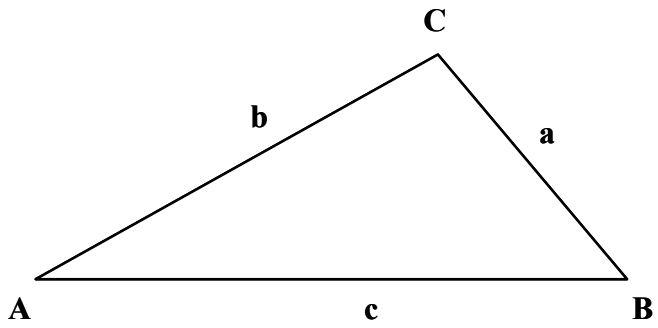
22. Write the given expression as the sine of an angle.

$\sin 30°\cos 65° + \sin 65°\cos 30°$

23. Use a double angle formula to rewrite the given expression.

$10\cos^2 x - 5$

24. Given $A = 54°$, $B = 80°$, and $a = 4.1$, use the Law of Sines to solve the triangle for the value of *b*. Round answer to two decimal places.



25. Given $a = 5$, $b = 8$, and $c = 9$, use the Law of Cosines to solve the triangle for the value of *A*. Round answer to two decimal places.

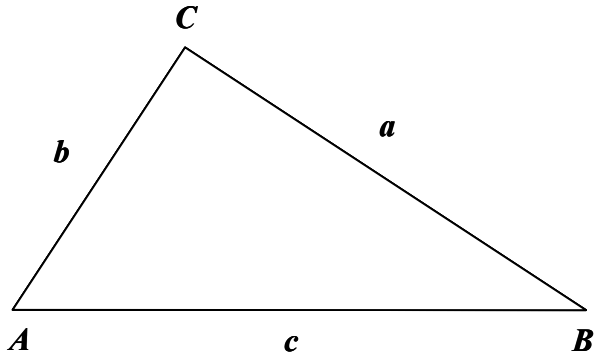
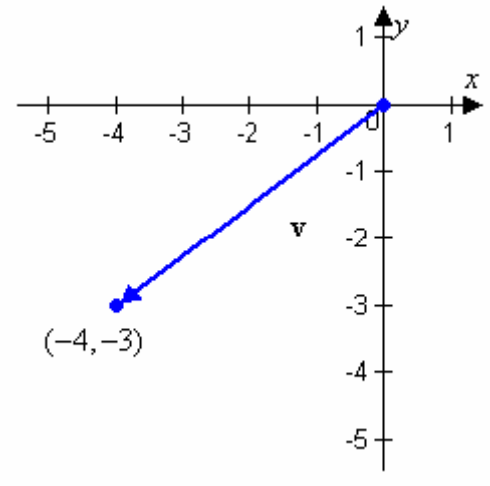


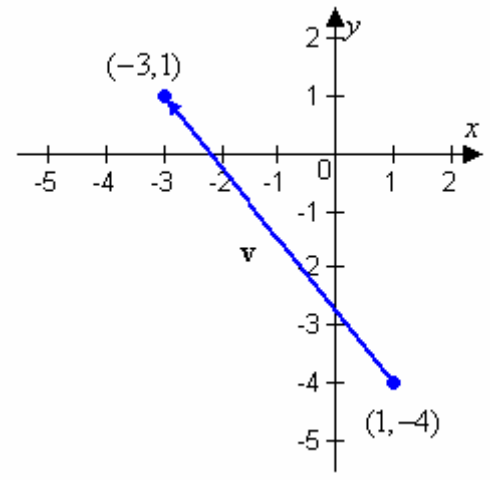
Figure not drawn to scale

26. Given $a = 12$, $b = 6$, and $c = 7$, use Heron's Area Formula to find the area of triangle ABC. Round answer to two decimal places.

27. Find the magnitude of vector **v**.



28. Find the component form of vector **v**.



29. If $\|\mathbf{u}\| = 1$ with a direction angle of 40° and $\|\mathbf{v}\| = 2$ with a direction angle of 10°, find the component form of the sum of **u** and **v**. Round answers to two decimal places.

30. Write the first five terms of the sequence. (Assume that *n* begins with 1.)

$a_n = 8n - 7$

31. Find the indicated term of the sequence.

$a_n = (-1)^n (4n-1)$

$a_{34} =$

32. Simplify the factorial expression.

$\frac{9!}{7!}$

33. Determine whether the sequence is arithmetic. If so, find the common difference.

–3, –8, –13, –18, –23

34. Find the indicated term of the geometric sequence. Round to the nearest thousandth.

$a_1 = 5, r = -1.04$

$a_{12} =$

35. Find the sum of the first 240 terms of the arithmetic series if $a_1 = -9$ and $a_{240} = -965$

36. Write the first five terms of the arithmetic sequence.

$a_3 = 20, a_{12} = 74$

37. Find the sum of the arithmetic series.

$\sum_{i=1}^{3} (2i+5)$

38. Find a formula for a_n for the arithmetic sequence.

$a_1 = -1$, $d = -5$

39. The first two terms of the arithmetic sequence are given. Find the indicated term.

$a_1 = -1, a_2 = 4,$

$a_7 =$

40. Determine whether the sequence is geometric. If so, find the common ratio.

–4, 8, –16, 32, ...

41. Write the first five terms of the geometric sequence.

$a_1 = 2, r = -\frac{1}{3}$

42. Find the sum of the infinite geometric series.

$$\sum_{n=0}^{\infty} 2\left(-\frac{1}{3}\right)^n$$

43. Find the sum of the finite geometric sequence. Round to the nearest thousandth.

$$\sum_{i=0}^{7} 200(1.02)^i$$

44. Calculate: ${}_7C_3$

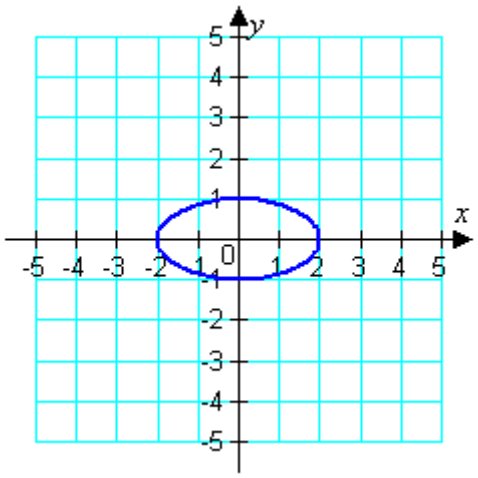
45. Expand and simplify the expression.

$(v+3)^5$

46. Find the coefficient *a* of the term in the expansion of the binomial.

Binomial	*Term*
$(x-2y)^9$	ax^2y^7

47. Write the equation of the ellipse below.



48. Find the center and vertices of the ellipse.

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

49. Find the vertices and asymptotes of the hyperbola.

$25y^2 - 4x^2 = 100$

50. Find the standard form of the equation of the hyperbola with the given characteristics.

vertices: (0, ±4) foci: (0, ±8)

1.	II	**26.**	14.95 sq. units
2.	II	**27.**	$\|\mathbf{v}\| = 5$
3.	$-\frac{3\pi}{4}$	**28.**	$\mathbf{v} = \langle -4, 5 \rangle$
4.	-1.056	**29.**	$\langle 2.74, 0.99 \rangle$
5.	$\frac{\sqrt{3}}{2}$	**30.**	1, 9, 17, 25, 33
6.	$\frac{1}{2}$	**31.**	135
7.	0.9848	**32.**	72
8.	1	**33.**	-5
9.	$\frac{7}{\sqrt{13}}$	**34.**	-7.697
10.	0.8634	**35.**	-116,880
11.	$y = 8\sqrt{3}$	**36.**	8, 14, 20, 26, 32
12.	IV	**37.**	27
13.	$1°$	**38.**	$a_n = 4 - 5n$
14.	$\frac{\pi}{3}$	**39.**	29
15.	$-\frac{\sqrt{2}}{2}$	**40.**	-2
16.	$-\frac{1}{2}$	**41.**	$2, -\frac{2}{3}, \frac{2}{9}, -\frac{2}{27}, \frac{2}{81}$
17.	$\theta = 150°$ or $\theta = 210°$	**42.**	$\frac{3}{2}$
18.	4	**43.**	1716.594
19.	$a = 4;\ d = 1$	**44.**	35
20.	$l = 92.24$ feet	**45.**	$v^5 + 15v^4 + 90v^3 + 270v^2 + 405v + 243$
21.	$\frac{\pi}{6}, \frac{5\pi}{6}$	**46.**	$a = -4608$
22.	$\sin(95°)$	**47.**	$\frac{x^2}{4} + \frac{y^2}{1} = 1$
23.	$5\cos 2x$	**48.**	center: (2, -1) vertices: (0, -1), (4, -1)
24.	$b = 4.99$	**49.**	vertices: (0, ±2) asymptote: $y = \pm\frac{2}{5}x$
25.	$33.56°$	**50.**	$\frac{y^2}{16} - \frac{x^2}{48} = 1$