

Exam Review

Name _____ Hr. _____

Unit 8

For Questions 12 and 13, find the sum of each arithmetic series.

12.
$$\sum_{n=5}^{10} (2n - 5)$$

13.
$$\sum_{n=6}^{40} (2 + 3n)$$

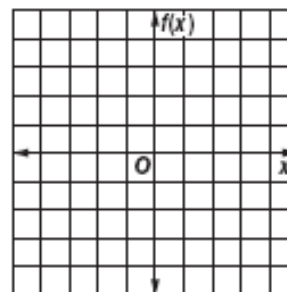
For Questions 14 - 17, find S_n for each arithmetic series described.

14. $a_1 = 3, a_n = 20, n = 6$

15. $6 + 11 + 16 + 21 + \dots + 131$

16. Find the equation for the n^{th} term of the arithmetic sequence: 13, 8, 3, -2, ...17. Find a_{21} for the arithmetic sequence: 152, 163, 174, ...

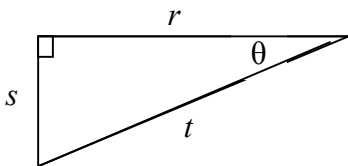
10) a) Graph $y = \sqrt{3x + 4}$.



b) State the domain and range of this function.

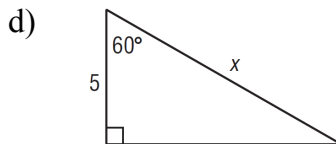
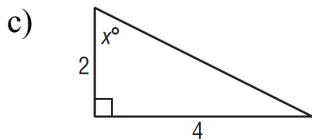
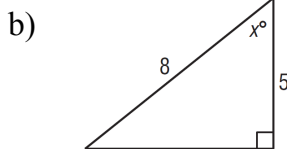
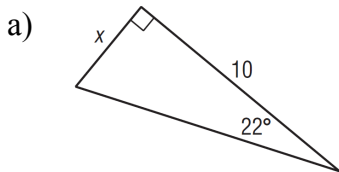
Unit 9

1. Using the triangle at the right, find all six trigonometric ratios if $s = 12$ and $t = 20$. Write your answers in reduced (simplified) form.



$$\begin{array}{ll} \sin \theta = \underline{\hspace{2cm}} & \csc \theta = \underline{\hspace{2cm}} \\ \cos \theta = \underline{\hspace{2cm}} & \sec \theta = \underline{\hspace{2cm}} \\ \tan \theta = \underline{\hspace{2cm}} & \cot \theta = \underline{\hspace{2cm}} \end{array}$$

3. Write an equation involving **sin**, **cos**, or **tan** that can be used to find x . Then solve the equation. Round measures of sides to the nearest tenth and measures of angles to the nearest degree.



For Questions 7-9, draw a right triangle to represent the problem. Next, write an equation involving *sin*, *cos*, or *tan* that can be used to find x . Then solve the equation. Unless otherwise specified, round measures of sides to the nearest tenth and angles to the nearest degree.

7. A tree is observed on the opposite bank of a river. At that point, the river is known to be 150 feet wide. The angle of elevation from a point 6 feet off the ground to the top of the tree is 15° . Find the height of the tree to the nearest foot.

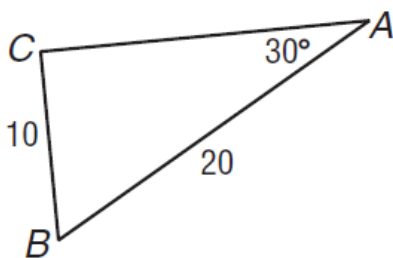
Algebra 2B

8. When landing, a jet will average a 3° angle of descent. What is the altitude x , to the nearest foot, of a jet on final descent as it passes over an airport beacon 6 miles from the start of the runway?

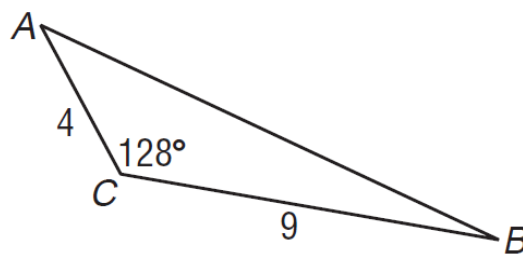
9. In a sightseeing boat near the base of Horseshoe Falls at Niagara Falls, a passenger estimates the angle of elevation to the top of the falls to be 30° . If the Horseshoe Falls are 173 feet high, what is the distance from the boat to the base of the falls?

For Questions 10 and 11, solve each triangle. Round measures of the sides to the nearest tenth and measures of the angles to the nearest degree.

10.



11.



Unit 10

2. Given a point P on the unit circle, find **sin θ** and **cos θ** .

a) $P = (0, -1)$

b) $P = \left(-\frac{4}{5}, -\frac{3}{5}\right)$

4. Rewrite each degree measure in radians and each radian measure in degrees.

a) 80°

b) 24°

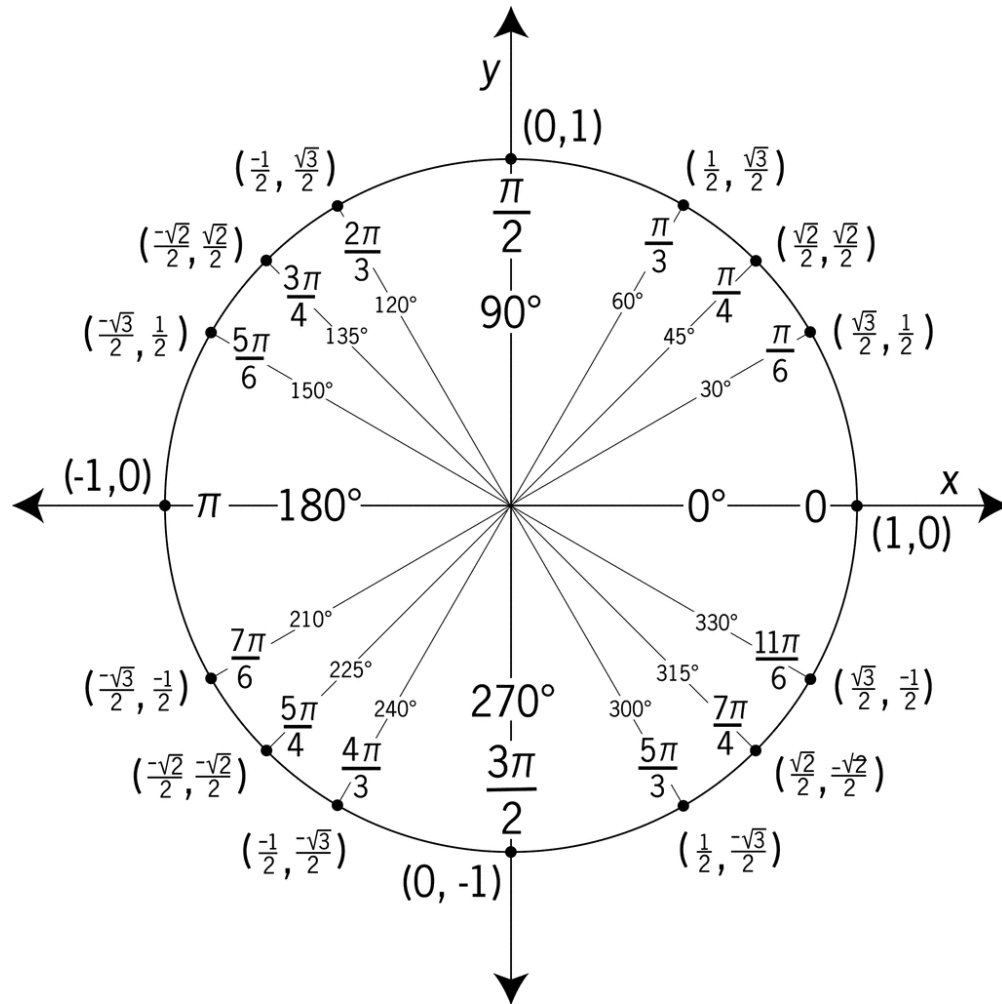
c) $-\frac{7\pi}{2}$

d) $\frac{17\pi}{30}$

5. Find one angle with positive measure and one angle with negative measure coterminal with the given angle.

a) 50°

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



6. Find the **exact value** of each trigonometric function. Use your unit circle! Be aware that you will NOT be given a copy of the unit circle for the final exam. Write your answers in reduced (simplified) form.

a) $\csc(-240^\circ)$

b) $\cos(2880^\circ)$

c) $\sin(-510^\circ)$

d) $\tan(495^\circ)$

e) $\cos\left(-\frac{5\pi}{2}\right)$

f) $\sin\left(\frac{5\pi}{3}\right)$

g) $\cos\left(\frac{11\pi}{4}\right)$

h) $\sec\left(-\frac{3\pi}{4}\right)$

i) $\cot\left(\frac{23\pi}{6}\right)$

Unit 11

For Questions 16-18, simplify completely.

$$16) \quad \frac{x^2 + 4x - 12}{x^2 - 9} \cdot \frac{x^2 + 5x - 24}{x^2 + 6x - 16}$$

$$17) \quad \frac{\frac{n^2 - 4n}{3n}}{\frac{24 - 6n}{5n^2}}$$

$$18) \quad \frac{2}{x-2} - \frac{8}{x^2 - 4}$$

For Questions 19 and 20, solve the equation.

Algebra 2B

$$19) \quad \frac{12w+19}{w^2+7w+12} - \frac{3}{w+3} = \frac{5}{w+4}$$

$$20) \quad \frac{8}{n^2-9} + \frac{4}{n+3} = \frac{2}{n-3}$$

Unit 12

- 21) Determine the equation(s) of any vertical asymptote(s) and the value(s) of x for any hole(s) in the graph of the following function.

$$f(x) = \frac{x^2 - 3x - 10}{x^2 - 8x + 15}$$

Unit 13

- 43) Bertie Botts wants to know how many green “Every Flavor Beans” are in a container of 150 “Every Flavor Beans”. He counts the number of green “Every Flavor Beans” in scoop of 30 randomly chosen “Every Flavor Beans” from the container.
Identify the population, sample, and the variable.

Population? _____

Sample? _____

Variable? _____

- 44) Use the data set {10, 12, 12, 14, 22}.

a) Find the mean.

b) Find the standard deviation. Round to the nearest tenth, if necessary.

- 45) Find the margin of sampling error when $p = 45\%$ and $n = 100$.

Recall: $ME = 2\sqrt{\frac{p(1-p)}{n}}$

- 46) In a survey of pet owners, 68% preferred dogs to any other kind of pet. The margin of sampling error was 5%.

a) How many people were surveyed?

b) What does the 5% margin of error mean?

Algebra 2B

47) Use the data in the table. Round to the nearest tenth, if necessary.

Record Low Temperatures in Honolulu, HI (°F)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
52	53	55	56	60	65	66	67	66	61	57	54

Source: www.weather.com

- a) Find the mode.
- b) Find the mean.
- c) Find the median.
- d) Find the range.
- e) Determine if there are any outliers. (Use the IQR formulas.)
- f) Give the 5-number summary.
Min = _____ Q1 = _____ Med = _____ Q3 = _____ Max = _____
- g) Draw a box-and-whiskers plot. (Be sure to number the horizontal axis.)



48) Biologists wanted to estimate the number of salmon in Lake Macatawa. They captured and carefully tagged 112 salmon. Then they released the salmon. One week later they caught 350 salmon, of which 75 were tagged. Estimate the number of salmon in the lake.

Algebra 2B

49) Consider the following quiz grades for two different classes.

Hour 1		Hour 3
0	3	
9	4	2 5
9 7 2	5	5 9
3 2 1	6	0 4 5 7 9
8 3 2 1 0	7	1 2 3 4 5 6 6 8
7 5 3 2	8	2 4 7 9
3 3 1	9	
0 0	10	0

- What is the interquartile range of the **first** hour?
- What is the mode of the **third** hour?
- What is the range of the **first** hour?
- What is the mean of the **third** hour?
- Are there any outliers for **first** hour? (Show IQR formula)
- Are there any outliers for **third** hour? (Show IQR formula)

50) Consider the circle graph, which shows hypothetical expenses for a freshman in college, with a total college expense of \$75,000.

- How much money will a freshman in college pay for tuition?
- What is the dollar amount spent on **both** travel **and** entertainment?
- How much more money for tuition than books?

