**Precalculus Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Spring Final Exam Review**

**CHAPTER 4: TRIGONOMETRIC FUNCTIONS**

1. Sketch the following angles in standard form. Find and label the reference angle. Also, find one positive and one negative coterminal angle.

1.  2.  3. 

1. Find (if possible) the complement and supplement of the angle.

4.  5.  6. 

1. Evaluate the six trigonometric functions of the given angle.

7.  8.  9. 

1. Use trigonometric identities to transform one side of the equation into the other.

10.  11.  12. 

1. The point is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

13. (12, 16) 14. (-7, 2) 15. (4, -8)

1. Sketch the graph of the function. Be sure to include two full periods of the graph, and label any asymptotes.

16.  17.  18. 

19.  20.  21. 

22.  23.  24. 

1. Sinusoidal Problems

25. As you ride a Ferris Wheel, your distance from the ground varies sinusoidally with time. Let t be the number of seconds that have elapsed since the Ferris Wheel started (this does not include loading the Ferris Wheel). You find that it takes 3 seconds to reach the top, 43 feet above the ground, and that the wheel makes a revolution once every 8 seconds. The diameter of the wheel is 40 feet.

a) Sketch a graph of the sinusoid.

b) What is the lowest you go as the Ferris Wheel turns, and why is this number greater than zero?

c) Write an equation of this sinusoid.

d) Predict your height above the ground when t = 6 seconds and when t = 14 seconds.

26. Mark Twain sat on the deck of a river steamboat. As the paddlewheel turned, a point on the paddle blade moved in such a way that its distance, d, from the water’s surface was a sinusoidal function of time. When his stopwatch read 4 seconds, the point was at its highest, 16 feet above the water’s surface. The wheel’s diameter was 18 feet, and it completed a revolution every 10 seconds.

a) Sketch a graph of the sinusoid.

b) Write the equation of this sinusoid.

c) How far above the surface was the point when Mark’s stopwatch read: t = 5 seconds and when t = 17.

**CHAPTER 6: ADDITIONAL TOPICS IN TRIGONOMETRY**

1. Use the Law of Sines to solve the triangle.

1.  2. 

3.  4. 

5.  6. 

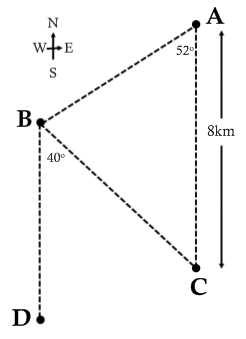
1. Use the Law of Cosines to solve the triangle.

7.  8. 

9.  10. 

1. Applications (use Law of Sines or Law of Cosines to solve).

11. The pitcher’s mound on a women’s softball field is 43 feet from home plate and the distance between the bases is 60 feet. How far is the pitcher’s mound from first base? (Hint: draw yourself a picture)

12. The course for a boat race starts at point A and proceeds in the direction to point B, then in the direction to point C, and finally back to A. Point C lies 8 kilometers directly south of point A. Approximate the total distance of the race. (Hint: use the figure as a guide)

**CHAPTER 5: ANALYTIC TRIGONOMETRY**

1. If and , use the fundamental identities to evaluate the other five trigonometric functions.
2. Use the trigonometric identities to simplify .
3. Verify the following identities:
4.  b) 

c)  d) 

e)  f) 

1. Find the exact value of .
2. Find all solutions of the equation in the interval .
3.  b) 

c)  d) 

**CHAPTER 11: LIMITS**

1. Approximate the limit (if it exists) algebraically using appropriate techniques
2.  b)  c) 
3. Find a formula for the slope of the graph of each function. Then use it to find the slope at the point
4.  b) 
5. Find the derivative of the function.
6.  b)  c) 

d) 

1. Find the limit (if it exists). If the limit does not exist, explain why.
2.  b)  c) 
3. Write the first five terms of the sequence and find the limit of the sequence (if it exists). If the limit does not exist, explain why.
4.  b)  c) 

**MATRICIES**

A = B= C = D=



**Find if possible. If not possible, explain why.**

1. The dimensions of D: \_\_\_\_\_\_\_

2.



3.



4. -2C =

5. D x C

6. Solve with Cramer’s Rule

