Advanced Pre-calculus Final Exam Review Fall Semester

1. Given: 
2. Find the distance between (3,-4) and (-1,-6).
3. Find the midpoint between (4,-3) and (-2,-7).
4. Find the equation of the line that passes through (4,-1) and (7,-3).
5. Find the equation of the line that passes through (3,-5) and is perpendicular to 2x-3y=5.
6. Determine whether the equation has y-axis, x-axis, or origin symmetry.
7. Given: 
8. Given: 
9. Given: determine the interval(s) where the function is increasing.
10. Given: find the average rate of change over the interval [1,5].
11. Sketch the graph of each piecewise function & state its domain and range:

 a) b)

1. State the transformations, domain, range and sketch the graph of each:

a)  b)  c) 

1. Given f(x) below sketch the graph of g(x) using transformations:

 a) g(x) = -f(x)

b) g(x)=2f(x)

c) g(x)=f(x+1)

d) g(x)=f(x)-2

1. Given: 

a) g(h(x)) and its domain d) f(h(g(x))) and its domain

b) (f+h)(x) and its domain e) State the inverse of g(x) and its domain

c) and its domain

1. State two angles, one positive and one negative that are conterminal with 208°.

\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

1. Find θ when the terminal side of θ passes through (-2,-2). Also find the 6 trig. ratio values of θ.
2. Name the quadrant where <0 and >0.
3. Express each trig ratio in terms of its reference angle;

a) \_\_\_\_\_\_\_ b) \_\_\_\_\_\_\_

c) \_\_\_\_\_\_ d) \_\_\_\_\_\_\_\_

1. Complete the chart: (no decimals)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| θ |  |  |  |  |  |  |
| a. 120° |  |  |  |  |  |  |
| b. 330° |  |  |  |  |  |  |
| c. 270° |  |  |  |  |  |  |

1. Given: = and =, What quadrant does θ belong\_\_\_\_\_,
2. Find θ from problem #20 θ= \_\_\_\_\_\_\_\_\_\_?
3. Change into radians (leave in terms of π)

a) 30° \_\_\_\_\_ b) 120° \_\_\_\_ c) -240° \_\_\_\_ d) -800° \_\_\_\_

1. Change to degrees:

a) \_\_\_\_ b) \_\_\_\_ c) \_\_\_\_ d) \_\_\_\_\_\_

1. Determine the radian measure of the central angle of a circle of radius 210 miles that intercepts an arc length of 375 miles.
2. Determine the arc length of a circle with radius 67 cm and central angle intercepting the arc of .
3. Determine the area of the sector of a circle with radius of 22.75 inches and a central angle of .

1. State three consecutive asymptotes of the function: (state the domain)
2. If =. Where β is in quadrant II, find:

a) \_\_\_\_ b) \_\_\_\_ c) \_\_\_\_ d) \_\_\_\_ e) \_\_\_\_

1. Given the equation tell the transformations which a, b, c, and d could change the equation
2. Given the equation : state the period, range values, domain values, phase shift, and transformations on the curve
3. Given the equation : State the period, domain values, range values, phase shift, and transformations on the curve
4. Graph:

 a)

 b)

 c)

1. ![[image]]()Write the equation of the graph below: (no phase shift)

y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. As you ride the Ferris wheel at the park, your distance from the ground varies sinusoidally with time. You start a stopwatch, when the time reads 50 seconds, your seat is at the highest point on the wheel. Let t be the number of seconds that have elapsed since the Ferris wheel started. You find that it takes you 110 seconds to make a complete revolution. The diameter of the wheel is 60 feet and sits 3 feet above the ground.

y=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a. Write an equation.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b. Determine the time you will be 40 feet above the ground for the second time.

1. Evaluate (give as exact values):

a) \_\_\_\_\_ b) \_\_\_\_\_

c) \_\_\_\_\_ d) \_\_\_\_\_

e) \_\_\_\_\_ f) \_\_\_\_\_\_

1. If , then \_\_\_\_\_\_\_ (>,<, or =)
2. Given triangle ABC where,. Find c to the nearest thousandth of a cm.
3. Given triangle ABC where , find ∠A to the nearest tenth of a degree.
4. The angle of depression from the top of a cliff 800 meters high to the base of a log cabin is 37°20'. How far is the cabin from the foot of the cliff to the nearest tenth of a meter?
5. Given triangle ABC, find all values to the nearest hundredth:

a) b, when ∠A=51°, ∠C=67°, and

b) c, when ∠A=43°, , and

c) Find ∠C if ∠A=40°, , and

d) Area of a triangle when

e) Area of a triangle when

f) Solve: 

1. The distance from a boat at point B to point A and C on the shore are known to be 100 meters and 80 meters, respectively, and ∠ABC=55°. Find AC to the nearest hundredth of a meter.

42. The sides of a parallelogram are 43.8 cm and 36.2 cm, and the measure of one angle is

125˚. Find the area of the parallelogram

 43. A tree is broken by the wind. The top touches the ground 13 meters from the base and makes an angle with the ground measuring . How tall was the tree before it was broken?

 44. Two planes, one flying 300 mph and the other 450 mph, left an airport at the same time. Three hours later they were 1200 miles apart. What was the measure of the angle between their flight paths?

 45. A ship is just offshore of New York City. A sighting is taken of the Statue of Liberty, which is about 305 feet tall. If the angle of elevation to the top of the statue is , how far is the ship from the base of the statue?

 46. Determine the area of a triangular lot if the sides measure 120 ft, 250 ft, and 150ft.

**Additional Textbook Practice**

**Chapter 4:**

Pages 365-368 Review Exercises

35, 39, 43, 47, 53, 55, 57, 69, 77, 81, 87, 91, 95, 97 (a),109, 115-121 odd,

127-130, 133-135, 141-144

Page 369 Chapter Test: Problems: 1, 3, 4-8, 10-12, 17, 19, 20

**Chapter 6:**

Pages 482-483: 1-36 Sections 6.1, 6.2

Page 486 Chapter Test: Problems: 1-8