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**MAT 1275 Final Exam review sheet**

#1 Solve for x (simplify completely):

a)  b)  c) 

#2 Find the vertex for each of the following quadratic functions and then graph the parabola:

a)  b)  c) 

d) Find the vertex of the quadratic function: y = -2x2 - 12x -19

#3 Simplify the complex fractions: a)  b)  c) 

#4 Perform the indicated operation. Express the final answer in the a + bi form:

a)  b)  c) Simplify:  d) Simplify: 

#5 Find the center and radius for the following circles:

1. x2 + y2 – 18x + 2y + 57 = 0 b) x2 + y2 – 14x - 2y + 25 = 0 c) x2 + y2 – 4x + 2y - 20 = 0

#6 For the information given, indicate the quadrant of the terminal side of the angle θ, and find

 the values of the six trig functions of θ.

a) sin θ =  and tan θ > 0 b) tan θ =2 and cos θ < 0 c) csc θ = -3 and cos θ > 0

#7 Solve each of the following system of equations:

a)  b)  c) 

#8 Solve the following equations:

a) $x=\sqrt{4x}-1$ b) $x-\sqrt{10-3x}=2$ c) $\sqrt{x^{2}+6x+9}=x-5$ d) 

#9 Given each , answer each of the following (round each answer to nearest tenth):

a) If a = 12, b = 8 and c = 5. Find  b) If, , a = 20. Find side b.

c) If b = 9, c = 6 and . Find side a. d) If, , b = 13. Find side a.

#10 Prove each of the following Trig Identities:

a)  b)  c) 

#11 Find all solutions in [0, 2π). State the solution in radians using the exact form:

a)  b) 

c)  d) 

#12 Solve the exponential equations to the nearest tenth:

a)  b)  c)  d) 

#13 Evaluate the following logarithms without the use of a calculator:

a)  b)  c)  d) 

**Answers to questions:**

#1 a)  b)  c) 

#2 a) Vertex: (1, -4) b) Vertex: (-1, -1) c) Vertex: (2, 2) d) Vertex: (-3,-1)

  

#3 a)  b)  c)  or 

#4 a)  b)  c)  d) 

#5 a) center (9, -1), r = 5 b) center (7, 1), r = 5 c) center (2, -1), r = 5

#6 a) x = 4, y = 3, r = 5, QI, cos θ = 4/5, tan θ =3/4, sec θ = 5/4, csc θ = 5/3, cot θ = 4/3

 b) x = -1, y = -2, r =, QIII, sin θ = , cos θ =, sec θ = , csc θ = , cot θ = 

 c) x = , y = -1, r = 3, QIV, sin θ = , cos θ =, sec θ =, tan θ = , cot θ = 

#7 a) (3,2), (3,-2), (-3,2), (-3,-2) b) (0,-3), (0, 3) c) (2,1), (-2,1), (2,-1), (-2, -1)

#8 a) x=1 b) x=3 c) no solution d) x=5, x=14

#9 a)  b)  c)  d) 

#10 LHS = Left Hand Side. RHS = Right Hand Side.

a) LHS: = ===

b) LHS: = ====

c) LHS: =====

#11 a) ,  b) , and  c) , ,  and 

 d) , ,  and 

#12 a)  b)  c)  d) 

#13 a)  b) -2 c) 3 d) 