

Name: _____

Math 115 Practice Exam 1

September 6, 2016

Read all instructions before beginning. In all problems you are required to show your work and provide any necessary explanations to receive credit. No calculators or cellphones are allowed.

Also.. have fun and good luck!

QUESTION	SCORE
1	
2	
3	
4	
5	
6	
TOTAL	

1 (a): (5 points) Answer the following true or false questions.

_____ (a) For any real numbers a and b , $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

_____ (b) The following is an equation for a circle with radius 5: $(x-2)^2 + (y-3)^2 = 5$.

_____ (c) $\frac{a}{b} + \frac{c}{d} = \frac{a+c}{b+d}$

_____ (d) The domain of $y = \sqrt{x^2 + 1}$ is all real numbers.

_____ (e) If a quadratic equation has positive discriminant, it has two real solutions.

1 (b): (5 points) Simplify the following. Be sure to show all of your work.

$$\frac{4}{1 + \sqrt{5}} =$$

2 (a): (10 points) Consider the following rational expression.

$$\frac{(x^2 + x - 20)}{(x^2 - 16)(x^2 - 3x - 10)}$$

- (a) Find the domain of the rational expression.
- (b) Simplify the rational expression and put it into lowest terms.

3: (10 points) Alicia averaged 23 mph on a trip from Cleveland to Pensacola on an adventure. On the return trip, she averaged 20mph and the trip took three hours longer. How far is it from Cleveland to Pensacola? (Hint: Make a table)

4 (a): (5 points) Using the quadratic formula, find the solution(s) to the following:

$$2x^2 - 5x - 2 = 1$$

4 (b): (5 points each) Solve the following.

(a) $\sqrt{3x-2} - \sqrt{x} = 2$

(b) $x^{2/3} - 9x^{1/3} + 8 = 0$

5: (10 points) Write the standard equation for the circle with center $(2, -1)$ and passing through the point $(3, 6)$. Make a sketch of this circle.

6: Answer the following.

(a) (5 points) Solve $|x - 1| \geq 1$

(b) (10 points) Let l_1 be the line defined by the equation $4y - \frac{16}{3} = 12x$. Find the line perpendicular to l_1 which passes through the point $(2, 3)$. Write the final answer in slope-intercept form.