

MATH 114
First Midterm Exam
Prof. Jesenko Vukadinović

Name: _____

TA: _____

P1	
P2	
P3	
P4	
P5	
P6	
P7	
P8	
TOTAL	

Read each question carefully and try to understand it before answering the questions. You may use the back of the pages if you need extra space. **Show all the computations to get full credit. Write clearly. Good luck!!**

1. (15 pts) Simplify the Expression

$$\frac{(x+2)^{3/2} - (x+2)^{-1/2}}{(x+2)^{3/2} - (x+2)^{1/2}} - \frac{(x+2)^{1/2}}{(x+2)^{3/2}}$$

2. (10 pts) Find the slope-intercept equation of the line through $P(-1, 3)$ that is
- (a) parallel to the line $2x+3y=4$
 - (b) perpendicular to the line $2x+3y=4$.

3. (15 pts) Find the radius and the center of the circle

$$x^2 + y^2 + 4x - 5y + 8 = 0$$

4. (15 pts) Find the equation of the circle that has endpoints of diameter $A(3, -1)$ and $B(1, 3)$.

5. (10 pts) Find the solution set of the inequality

$$|5 - 3x| \geq 4$$

6. (10 pts) Solve the equation

$$x^{-5} - x^{-5/2} - 6 = 0$$

7. (15 pts) Find the solution set of the inequality

$$\frac{(2x - 1)(x + 2)^2}{(x - 1)^2(x + 1)} > 0$$

8. (10 pts) Evaluate

$$\frac{i}{(i-1)^4}$$