

Instructor: Sal Barone

Name: _____

GT username: _____

1. No books or notes are allowed.
2. No electronic devices are allowed.
3. Show all work and fully justify your answer to receive full credit.
4. Please BOX your answers.
5. Good luck!

Page	Max. Possible	Points
1	24	
2	28	
3	32	
4	16	
Total	100	

1. Find the inverse of the function $f(x) = \frac{x+3}{x-2}$, and give the domain and range of f and f^{-1} .
(12 pts.)

2. Let $f(x) = \sqrt{x-4}$ and $g(x) = 2-3x$. Find $(f \circ g)(x)$ and also find the domain of $(f \circ g)(x)$.
(12 pts.)

3. Write an equation for a function whose graph fits the description given as follows. The graph of $f(x) = |x|$ is shifted 2 units right, and shifted 3 units down. (8 pts.)

4. Let $f(x) = 3x^2 - 2x$. Find $f(-3)$ and $f(2)$ and find the average rate of change as x changes from -3 to 2 . (12 pts.)

5. Find an equation of the vertical line through the point $(2, 6)$. (8 pts.)

6. It costs \$15 flat fee to rent a lawnmower, plus \$3 an hour starting with the first hour. Let x represent the number of hours rented, so y represents the charge to the user. **Write an equation** of the form $y = mx + b$ that represents the situation. If the user was charged \$24, then **how many hours** did they rent the mower? (8 pts.)

7. Write an equation of the line containing the given point and parallel to the given line. (10 pts.)
 $(2, -3); \quad 2x - 3y = 4$

8. Simplify the expression $\frac{\frac{2}{x+h} - \frac{2}{x}}{h}$. (12 pts.)

9. What is the center and radius of a circle with endpoints of a diameter at the points $(3, 5)$ and $(-1, 1)$? (12 pts.)

10. Simplify the expression $(-8)^{1/3}$. (6 pts.)