MATH 107 Final Exam
UMGC
Spring 2021

1. $1000 is invested in account which offers 1.25%, compounded continuously. Determine how much is in the account after a) 5 years, b) 10 years, c) 30 years, and d) 35 years. Round to the nearest cent.

2. Solve the equation: $log_5(18 - x^2) = log_5(6 - x)$.

3. For $f(x) = 4 - x; g(x) = 1 - x^2$ $find$: $a)$ $(g \circ f)(-3); b)$ $(f \circ g)\left(\frac{1}{2}\right)$.

4. If possible, find the inverse of $f(x) = \frac{x-2}{3} + 4$.

5. Find all real solutions for: $\frac{-y^3+4y}{y^2-9} = 4y$.

6. Solve the rational inequality. Express your answer using interval notation; $\frac{4x}{x^2+4} \geq 0$.

7. Find all real solutions for: $3(y^2 - 3)^2 - 2 = 10$.

8. Use the give complex numbers for: $a)$ $z\bar{z}$; $b)$ $\frac{w}{z}$ ::: $z = 4i, w = 2 - 2i$.

9. a) Find *x*- and *y*- intercepts, if they exist; b) Determine the domain and range; c) List the intervals on which the function is increasing, decreasing or constant for: $f(x) = \frac{|x+4|}{x+4}$.

10. a) Find the point-slope form and b) the slope-intercept form of the line with the given slope and passing through the given point: $m = \frac{2}{3}$, $P(-2, 1)$.

Instructions: Please ensure you submit a version that I can read, (pdf, jpeg, doc, png are readable for me.) Ensure you show your work if you wish to receive partial credit.

Good luck to each of you.

Dr. Barnes