

Exam # 1 (Closed book)

Name		Section		Date	Sep 30, 15 (Wednesday)
Topics: Chapter 1.1, 1.2, 1.3, 1.4, 1.5, 1.6			Maximum points possible: 110		
Items		Points		Your score	
Question 1		10			
Question 2		10			
Question 3		10			
Question 4		10			
Question 5		10			
Question 6		10			
Question 7		10			
Question 8		10			
Question 9		10			
Question 10		10			
Extra credit		10			
You have earned					

Answer every question:

1. (a) Determine an equation for the line Perpendicular to the line $7x - 9y = 10$ and passing through the point $(-5, -8)$. Sketch the graph. (b) Determine an equation for the line Parallel to the line $7x - 9y = 10$ and passing through the point $(-5, -8)$. Sketch the graph. (Note: Sketch three lines on the graph for three different equation).

2. When iTunes sold music album for \$100 per album, weekly sales averaged 150 albums. For each \$10 drop in the album price the average number of player sold increased by 25. (a) Describe the relationship between album price and average weekly sales (b) What are average weekly sales if iTunes charges 60 per album?

3. At selling price \$99, a small a wine company breaks-even on total sales of \$4999. If the company's overhead is \$299, find the marginal production cost of wine and find the profit of sale on 199 bottles of wine.

4. The table below shows the average yearly income of an employee for the year of 2010 to 2013.

Year	2010	2011	2012	2013
Income	10,000	11,000	12,000	13,000

a. Find the regression line and sketch the graph. Write the equation for the best fit line. What is the slope? What is the Y intercept? (b) Predict 2014 income and calculate r.(Formulas will be provided)

5. Consider the data below: 10, 20, 30. (a) Find central tendency (b) Find variance and standard deviation. (Formulas will be provided)

6. (a) What is function? What is the difference between Injective, surjective and Bijective functions. Use graphs to support your claim. (b) Compute the difference of quotient for $f(x) =$

$$\sqrt{x^2 - 2}$$

7. (a) Determine the domain and range for (a) $f(x) = 2x + 1$; (b) $f(x) = |x + 1|$; (c) $f(x) = \frac{1}{\sqrt{x-2}}$; (d) $f(x) = \sqrt{x-2}$ (b) Find the domain only $f(x) = \frac{x}{x^2 - 7x + 12}$ (c) Let $f(x) = 2x + 3$ and $g(x) = x^2 + 1$. Determine (a) $f(g(3))$ and (b) $g(f(3))$. (Note: You need to show the graph for domain and range)

8. A ball thrown vertically upward from the 200 feet above the ground with initial velocity of 100 mile per second which is given by $h = -16t^2 + 48t + 160$. Find (a) How long it takes ball to reach the highest point and what is this height and How long does it take for the ball to hit the ground? (b) A farmer will construct a rectangular enclosure from 1200 feet of fencing. He plans to subdivide the enclosure into three parts. Determine the dimensions of enclosure that maximized the enclosed area.

9. (a) Compute the difference of quotient for $f(x) = -2x^2 + 600x$ (b) Determine the zeros and then sketch the graph of $f(x) = x^2 - x - 12$

10. Show the function defined by the equation $y = f(x) = 4x^3 - 2x$ is odd. Show the graph of the equation $xy - 2x^5y^3 = 0$ is symmetric with respect to the origin. (b) Discuss the symmetry of the rational function defined by $f(x) = \frac{x}{x^2 - 4}$

Extra-credit problem: Sketch the quadratic equation graph: $Y = 2(x - 2)^2 - 2$