

HOMEWORK 3 - MATH 111

DUE DATE: Monday, October 4

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Graph the piece-wise defined function $f(x) = \begin{cases} 3 - x, & \text{if } x \leq 0 \\ 2x - 1, & \text{if } x > 0 \end{cases}$.
2. Graph the function $f(x) = |x-1|+2$ by using the piece-wise technique.
3. Let the supply for sugar be given by $p = 1.4q - 0.6$ and the demand by $p = -2q + 3.2$ where p is price in dollars. Find the equilibrium quantity and the equilibrium price.
4. Fully study (find vertex, opening direction, axis of symmetry and intercepts) the graph of $f(x) = x^2 - 10x + 20$.
5. Find the equation of the parabola with vertex $V = (1, 2)$ that passes through the point $P = (-1, -2)$.
6. If an object is thrown upward with an initial velocity of 32 feet per second then, its height in feet above the ground after t seconds is given by $h(t) = 32t - 16t^2$. Find the maximum height attained by the object and the time that it takes for the object to hit the ground.
7. Create the sign table and then make a rough sketch of the graph of the function $f(x) = x^2(x-3)(x+2)$.
8. Create a sign table and then make a rough sketch of the graph of the function $f(x) = x^3 - 2x^2 - 8x$.