Prince Sultan University
Department of Mathematics and General Sciences

Finite Mathematics
Math 101
Major I
Term 151
Thursday, October 08, 2015

Time Allowed: 75 minutes

Name:
Student Number:
Section:
Jehad 8.00 or Jehad 11.00 / Abid / Muhammad

Statement of Ethics:
I agree to complete this exam without unauthorized assistance from any person, materials, or device.

Signature:

Total/60:

Total/20:

Q.1 (5+7+6 points) Solve

a) $4-\sqrt{3x+1}=0.$

b) $(x-5)^2+7(x-5)+10=0.$

c) $\frac{5(3x+1)}{3}>\frac{2x-4}{6}+\frac{x}{2}.$

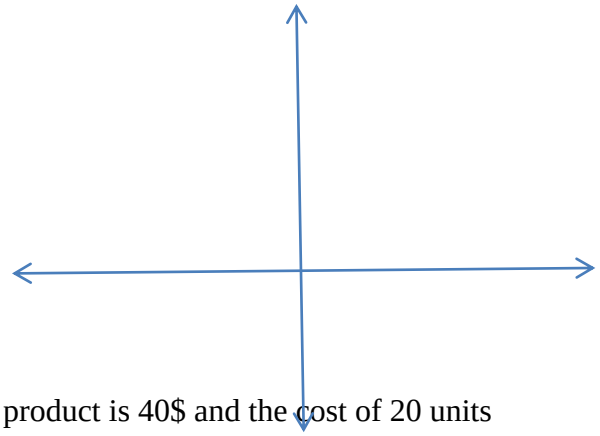
Q.2 (6 points) A person wishes to invest 20,000$ in two enterprises so that the total income per year will be 1440$. One enterprise pays 6% annually, the other has more risk and pays 7.5% annually. How much must be invested in each?

Q.3 (7 points) A Corn refining company produces corn gulten cattle feed at a variable cost of 82$ per tonne. If fixed costs are 120,000$ per month and the feed sells for 134$ per tonne, how many tonnes must be sold each month for the company to have a monthly profit of 560,000$.

Q.4 (8 points) Consider the quadratic function $f(x) = x^2 + 6x + 11$.

a) Find the vertex x and y intercept(s), if any.

b) Graph the function $f(x)$ and find the range.



Q.5 (6 points) Suppose the cost of producing 10 units of a product is 40$ and the cost of 20 units is 70$. If the cost (c) is linearly related to the output (q).

a) Find a linear equation that expresses c in terms of q.

b) Find the cost of producing 35 units.

Q.6 (7 points) Determine the slope-intercept form and a general linear form of an equation of the straight line with the following properties: passing through $(1,2)$ and is perpendicular to the line $-3y+5x=7$.

Q.7 (8 points) The revenue is given by $R(x)=110x-x^2$ and the cost is given by $C(x)=300+6x$.

a) Find an expression for the total profit function $P(x)$.

b) Determine the maximum value of the total profit function $P(x)$.

c) What is the value of x that maximizes the profit.