

KING FAHD UNIVERSITY OF PETROLUUM & MINERALS

Math 131 Term 042

Quiz #1 Section: 3(a)

Name:

ID:

Serial:

Q1. A person wishes to invest \$22,000 in two projects **A** and **B**, so that the total income per year will be at least \$1500. Project **A** pays 6% annually; and project **B** is more risky and pays 8% annually. What is the minimum amount that he should invest in project **B**?

Solution:

Let x = The amount that he should invest in project B. Then his total income per year will be at least \$1500 iff

$$(8/100)x + (6/100)(22000-x) \geq 1500$$

iff

$$(8/100)x - (6/100)x + 1320 \geq 1500$$

iff

$$(2/100)x \geq 1500 - 1320 = 180$$

iff

$$x \geq \frac{(100)(180)}{2} = 9000$$

Then minimum amount that he should invest in project B is \$9000.

Q2. Suppose that the consumer will buy 120 units of a product if the price is \$15 per unit and he will buy 80 units if the price is \$25 per unit. Then find:

- The demand function assuming that it is linear
- The quantity that the consumer will buy if the price is \$20 per unit?

Solution:

$$(a) m = (25 - 15) / (80 - 120) = -1/4$$

Then the demand function is given by:

$$p - 25 = (-1/4)(q - 80)$$

which implies that

$$p = (-1/4)q + 45$$

$$(b) p = 20 = (-1/4)q + 45$$

$$\text{implies that } q = (-4)(20 - 45) = 100$$