# Chapter 14 – 2d Applications in Business and Economics

**Example 1.** An investor is presented with a choice of two investments: an established clothing store and a new computer store. Each choice requires the same initial investment and each produces a continuous income stream which can be invested at 10% compounded continuously. The rate of flow of income from the clothing store is expected to be and the rate of flow of income from the computer store is expected to be . Compare the future value of these two investments to determine which is the better choice over the next 5 years.

**Clothing Store**

**Computer Store**

The clothing store would be the better investment.



**Example 2.** A business is planning to purchase a piece of equipment that will produce a continuous stream of income for 8 years with a rate of flow . If the income stream earns 6.95% compounded continuously, what single deposit into an account earning the same interest rate will produce the same future value?

**Example 3.** Find the consumers’ surplus at a price level of for the price-demand equation

The consumers surplus is the area between the price-demand curve and the line and represents the total savings for consumers who are able to purchase the item at a price of but would have paid more if necessary. Since the slope of the price-demand curve is negative, the demand curve is above the line and the consumers’ surplus, CS, is given by:

**Example 4.** Find the producers’ surplus at a price level of for the price-supply equation

The producers surplus is the area between the price-supply curve and the line and represents the total gain for producers who are able to sell the item at a price of but would have sold it for less if necessary. Since the slope of the price-supply curve is positive, the supply curve is below the line and the producers’ surplus, PS, is given by: