Question 1

Demand

Your Canadian company produces Basem's Bionic Boots, and other innovative mechatronic footwear. Prior to launching your latest revision of the product, you commission a market study to assess global market size. The research produces the following table summarizing price vs. regional quantity (Canada + select international markets).

Price	BC	Ontario	Nova Scotia	Brazil	Egypt	Malaysia	MARKET
$ 100	2000	2500	500	3000	10000	8000	26000
$ 200	1400	2300	300	1000	8000	5000	18000
$ 300	700	2000	200	200	2000	2000	7100
$ 400	0	400	100	0	1000	500	2000
$ 500	0	0	0	0	500	0	500

Which of the following statements can be inferred from the table

A. Global market demand appears highly linear relative to the prices under consideration.

B. The Western Canadian market demand appears highly non-linear at the lowest price points.

C. The Canadian market demand appears highly linear relative to mid and lower price points.

D. North African market demand may outpace European demand at all but the highest price points.

E. The global market demand exhibits high linearity relative to the entire price range

Question 2 - Supply

Which statement best describes why the slope of the supply curve is typically upwards-sloping?

A. Supply always increases regardless of price

B. It is natural to expect companies to "jump in" to the market if prices continue to increase

C. It is a consequence of price being the dependent variable

D. The slope of the supply curve is often orthogonal to that of the demand curve

E. It denotes strong price elasticity

Question 3 - Equilibrium

In 2010 a market assessment for a particular product determined an equilibrium point (P0,Q0). In 2020, the equilibrium point was assessed to be (P0 - $5, Q0 + 5). Which statement describes this situation the best?

A. Supplier companies, through increase in manufacturing efficiency, have rationalized an overall lower price in the market.

B. The demand for these types of products faced a dramatic drop in popularity.

C. Inflation has been a major impediment to market growth and has suppressed prices.

D. The decrease in the slope of curves indicate significant inelasticity in price

E. The public's opinion of this type of product has settled to lower perception of value.

Question 4 - Supply Curve Shift

Your company produces an innovative new household device that monitors GHG emissions from gas stoves and furnaces. In its most recent annual strategic plan, company has concluded that your supply strategy will be based on a supply curve shift to the right. Which corresponds to such a shift?

A. The entire supply chain is facing pricing increases and shifting the key parameters.

B. Demand has increased due to more awareness of sustainability issues.

C. A recent engineering review identified a consolidation of several major components into a single component and the overall cost of production is significantly lower.

D. A market correction for an equilibrium point that exhibited a one time response to a global crisis.

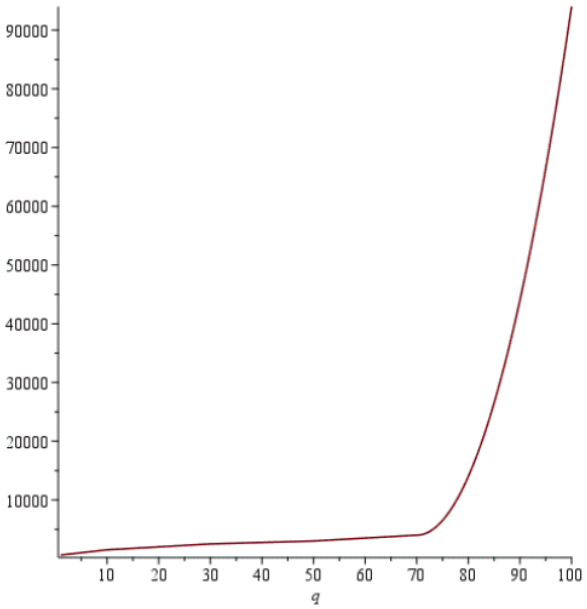
E. Supply curves can only shift towards the right as the slope is typically positive.

Question 5

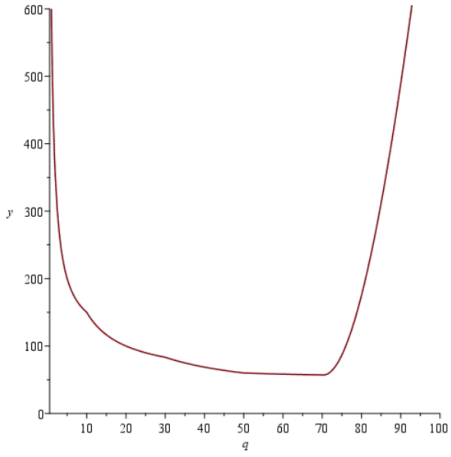
Supply Curve Source

Suppose company A reasons that it would have a total cost each month to produce a given number of units as listed in the table below. At first, producing more and more units allows initial investments in renting equipment to be distributed over more units, reducing costs. However, eventually the company runs into supply chain and staffing problems associated with too much volume of this product and cost per unit begins to rise sharply.

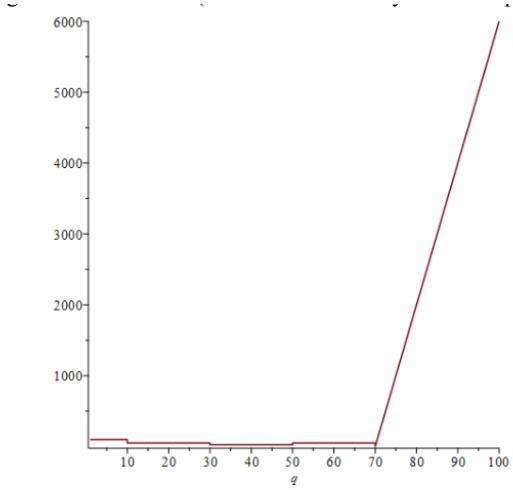
# of units (q)	Total cost to produce this many units (C)	Average cost to produce each unit (C/q)	Slope of total cost (dC/dq) ("Marginal Cost" if quantity was continuous)
1-10	\$500 + \$100*q	\$500/q + \$100	\$100
11-30	\$1500 + \$50*(q-10)	\$1000/q + \$50	\$50
31-50	\$2500 + \$25*(q-30)	\$1750/q + \$25	\$25
51-70	\$3000 + \$50*(q-50)	\$500/q + \$50	\$50
71+	\$4000 + \$100*$(q-70)^2$	\$4000/q + \$100*$(q-70)^2$/q =\$494k/q - \$14k +\$100*q	\$200*q - \$14000



Total cost vs. total units produced



Average cost of each unit (Total cost divided by # of units produced)



'Marginal cost" of each unit (ignoring discrete nature; i.e., derivative of total cost with respect to quantity)

If the sale price of each unit is $600, how many units should the company produce to maximize overall profit?

a) 2 b) 20 c) 73 d) 92 e) None of the above

Question 5.1

If the sale price was $100, how many units should be produced to maximize profit for the company?

a) 20 b) 42 c) 71 d) 75 e) None of the above

Question 5.3

What's the minimum unit price the company would be willing to produce any units, and how many would they produce at this price?

a) $600, 2 b) $100, 50 c) $57.15, 70 d) $25, 50 e) None of the above

Question 5.4

Given this, what can you say about the supply curve for the company?

a) The supply curve follows the average cost per unit the whole time, sloping downward at first and later sloping upward

b) The supply curve follows marginal cost the whole time: it's a series of horizontal straight lines in each range until and eventually an upward sloping line with a slope of $200.

c) The supply curve is similar to the average cost plot, but only the right side of it once it starts sloping upwards

d) The supply curve is similar to the total cost plot

e) None of the above

Question 5.5

If the demand curve for this product is QD = 90*(1-P/$200) where P is the sale price, and the company is the only supplier of this product, what should they set the sale price at to maximize profit?

a) $150 b) $133.33 c) $113.33 d) $88.89 e) $50

Answers:

1) C
2) B
3) A
4) C
5) C
5.1) E
5. 2) D
5.3) C
5.4) C