KIA Fresh Graduates Program - Economics
Case Study Solution: Apex Tools

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1. Completed Table

Using Excel, the table is completed as follows:

Q	P	TR	MR	TC	TFC	TVC	ATC	AFC	AVC	MC	Profit
0.0	8.0	0.0	-	15.0	15.0	0.0	-	-	-	-	-15.0
1.0	8.0	8.0	8.0	15.5	15.0	0.5	15.5	15.0	0.5	0.5	-7.5
2.0	8.0	16.0	8.0	16.8	15.0	1.8	8.4	7.5	0.9	1.3	-0.8
3.0	8.0	24.0	8.0	18.9	15.0	3.9	6.3	5.0	1.3	2.1	5.1
4.0	8.0	32.0	8.0	22.9	15.0	7.9	5.7	3.75	2.0	4.0	9.1
5.0	8.0	40.0	8.0	28.9	15.0	13.9	5.78	3.0	2.78	6.0	11.1
6.0	8.0	48.0	8.0	37.9	15.0	22.9	6.32	2.5	3.82	9.0	10.1
7.0	8.0	56.0	8.0	50.9	15.0	35.9	7.27	2.14	5.13	13.0	5.1
8.0	8.0	64.0	8.0	65.9	15.0	50.9	8.24	1.88	6.36	15.0	-1.9

Table 1: Completed Cost Structure Table for Apex Tools

2. Breakeven Point

The breakeven point occurs where Total Revenue (TR) just covers Total Cost (TC). From the table, TR just covers TC at Q = 3 where the firm makes a profit of 5.1. In contrast, at Q = 2 the firm suffers a loss of -0.8. Therefore, Apex Tools breaks even at a production level of 3 units.

3. Region of Profitability

The region of profitability is identified by the positive profit values. From the table, Apex Tools is profitable at production levels from 3 to 7 units.

4. Graph of MR, ATC, AFC, AVC, and MC

Using Excel, Figure 1 below is generated to plot MR, ATC, AFC, AVC, and MC as a function of output.

5. Profit Maximization

Total profit is maximized at Q = 5 where profit is 11.1. At this point MR = 8 is close to but still above MR = 8 which makes producing the 5th unit profitable. Beyond this point, MC is above MR and increasing (2nd order condition). This means that producing beyond Q = 5 would result in lower overall profit.

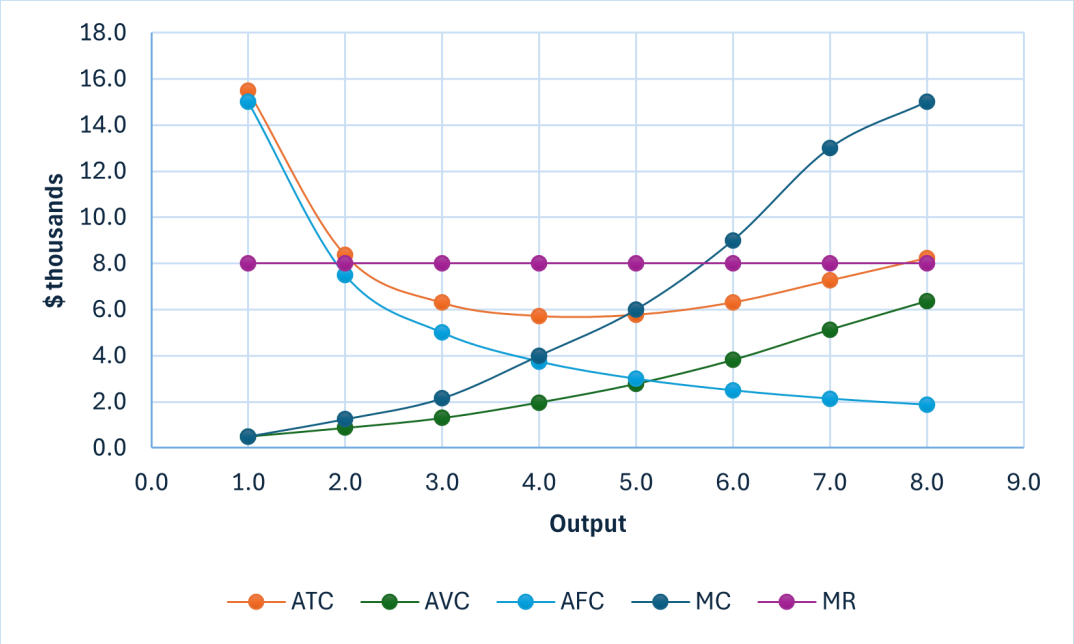

Figure 1: Cost and marginal revenue curves for Apex Tools