Question 1

Derive the profit functions, average cost functions and net supply correspondences of the following firms, and draw their net supply correspondences

$$Q = \alpha X, \alpha > 0 \tag{1}$$

$$Q = \alpha X^{\frac{1}{2}}, \alpha > 0 \tag{2}$$

$$Q = \alpha X^2, \alpha > 0 \tag{3}$$

$$Q = \min(X_1, \alpha X_2), \alpha > 0 \tag{4}$$

Question 2

Consider the function $R_{++}^2 \xrightarrow{f} R, f(p_1, p_2) = p_2 - 3p_1$

1.is it a profit function?

2. If it is, construct a rationalizing production set for f, and derive the corresponding net supply correspondence

Question 3

Consider the following price-quantity data (two commodities, three observations)

$$\text{quantity vectors} = \begin{bmatrix} 1 & 2 & -2 \\ -1 & -3 & 1 \end{bmatrix} = [y^1, y^2, y^3] \tag{5}$$

$$\text{price vectors} = \begin{bmatrix} 3 & 4 & 1 \\ 3 & 2 & \theta \end{bmatrix} = [p^1, p^2, p^3] \tag{6}$$

1. For which values of $\theta > 0$ do the data satisfy WAPM?

2. Construct and draw the rationalizing production set YO when $\theta = 2$.

3. Find the profit maximizing netput vectors of the firms with production sets $Y = \{y^1, y^2, y^3\}$ and $Y = YO$ at $p = [4,3]$ when $\theta = 2$.

4. Find the profit functions and the net supply correspondences of the firms with production sets $Y = \{y^1, y^2, y^3\}$ and $Y = YO$ when $\theta = 2$.

Varian
2.3, 2.6, 2.7   3.4, 3.5
MWT
5.B.6 5.D.5 5.AA.4