Mathematical Analysis of Equilibrium

\[ Q = q + q + q \]

Agenda

- The previous two lectures worked with graphical and tabular cost functions.
- Now we turn to mathematical cost functions.

Three Firms

- \[ C = 10 + 3q + 2q^2 \]
- \[ C = 5 + 4q + q^2 \]
- \[ C = 10 + 16q + 4q^2 \]

\[ MC = 3 + 6q \]
\[ MC = 4 + 2q \]
\[ MC = 16 + 8q \]

Three Firms

\[ MC = \frac{p-3}{6} \]
\[ q = \frac{(p-4)}{2} \]
\[ q = \frac{(p-16)}{8} \]

Warning: these equations are valid only if \( p > AC_{min} \)
Recall the Process

\[ C = 10 + 3q + 2q^2 \]
\[ MC = 3 + 6q \]
\[ 3 + 6q = \frac{10}{q} + 3 + 2q \]
\[ 4q^2 = 10 \]
\[ q = \sqrt{2.5} \]

The Supply Function

\[ q = \frac{p-3}{6} \]
\[ q = \frac{p-4}{2} \]
\[ q = \frac{p-16}{8} \]

The Supply Function

\[ Q = q + q + q = \frac{(p-3)}{6} + \frac{(p-4)}{2} + \frac{(p-16)}{8} \]
\[ Q = \frac{(19p-108)}{24} \]

End

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