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$$1. Q = 3P^2 + gP + 6$$

$$Q' = 6P + g$$

$$Q's = \frac{dQs}{dP} = 6P + g$$

$$\eta_s = \frac{dQs}{dP} \cdot \frac{P}{Qs} = 6P + g \cdot \frac{P}{3P^2 + gP + 6}$$

Jika  $P = 2$

$$\frac{6P + g \cdot P}{3P^2 + gP + 6} = \frac{6(2) + g \cdot 2}{3(2)^2 + g(2) + 6}$$

$$= 12 + g \cdot \frac{2}{12 + 18 + 6}$$

$$= \frac{42}{36} = 1,16$$

Jika  $P = 3$

$$\frac{6P + g \cdot P}{3P^2 + gP + 6} = \frac{6(3) + g \cdot 3}{3(3)^2 + g(3) + 6}$$

$$= 27 \cdot \frac{3}{27 + 27 + 6}$$

$$= \frac{81}{60} = 1,35$$

$$2. P_1 = 3000$$

$$P_2 = 3.700$$

$$Q_1 = 6000 \text{ ton}$$

$$Q_2 = 6030$$

$$E = \frac{\Delta Q}{\Delta P} \times \frac{1}{2} \frac{(P_1 + P_2)}{(Q_1 + Q_2)} = \frac{1}{10} \times \frac{1}{2} \frac{6.200}{12.130}$$

$$= \frac{70}{700} \times \frac{1}{2} \frac{(3.000 + 3.700)}{(6000 + 6030)} = \frac{1}{10} \times \frac{3.380}{6.065} = 0,55$$

$$\begin{aligned}
 3. \quad Q_A &= S + PA - \frac{1}{2} PB \\
 &= 5 + 4 - \frac{1}{2} \cdot 3 \\
 &= 9 - \frac{3}{2} \\
 &= \frac{15}{2} = 7.5
 \end{aligned}$$

$$\begin{aligned}
 Q_A &= 1 + (-\frac{1}{2}) \\
 &= 0.5
 \end{aligned}$$

$$\begin{aligned}
 EA &= Q_A \times \frac{4}{\frac{3}{15} \cdot 15} \\
 &= \frac{4}{15} = 0.267
 \end{aligned}$$

$$\begin{aligned}
 E_{AB} &= \frac{f Q_A}{\sigma_{PB}} \times \frac{P_B}{Q_A} \\
 &= \frac{4}{15} \times \frac{3}{\frac{3}{15} \cdot 15} \\
 &= \frac{3}{15} = 0.2
 \end{aligned}$$

$$\begin{aligned}
 Q_B &= -PA + SPB \\
 &= -4 + 15 \\
 &= 11
 \end{aligned}$$

$$\begin{aligned}
 Q_B &= -1 + 5 \\
 &= 4
 \end{aligned}$$

$$FB = 4 \times \frac{3}{11}$$

$$= \frac{12}{11} = 1.0909$$

$$\dot{F}_{BA} = \frac{\sigma_{Q_B}}{\sigma_{PA}} \times \frac{PA}{Q_B}$$

$$= 4 \times \frac{4}{11}$$

$$= \frac{16}{11} = 1.45$$