→ As $\int \frac{1}{f(x)} f'(x)\,dx = \ln(f(x)) + C$, we get:

$$6000 \cdot \int_0^{50} \frac{1}{Q+50}\,dq \qquad (1 = (Q+50)')$$

$$\Rightarrow 6000\left[\ln(Q+50)\right]_0^{50}$$

→ By Barrow's rule, we get:

$$6000 \cdot [\ln(100) - \ln(50)]$$

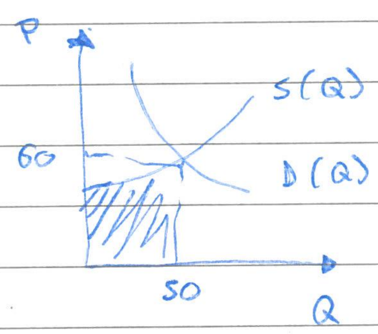
→ As $\ln(x) - \ln(y) = \ln\left(\frac{x}{y}\right)$, we get:

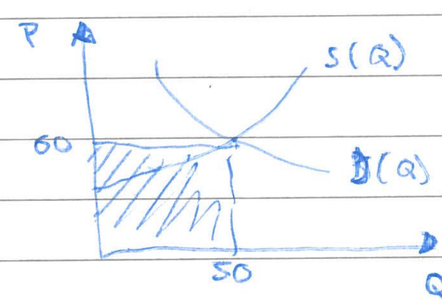
$$6000 \cdot \left[\ln\left(\frac{100}{50}\right)\right] = \boxed{6000 \cdot \ln(2)}$$

Hence, $\int_0^{50} D(q)\cdot dq = 6000 \cdot \ln(2)$ and $P \cdot q = 3000$

Thus, $\boxed{\text{Consumer Surplus}} = 6000(\ln(2)) - 3000 \approx \boxed{1{,}158.9}$

- Producer Surplus:
  2 elements





The cost of producing Q^* units
→ $\int_0^{50} S(Q)\,dq$

The revenue of selling Q^* units
$P^* \cdot Q^* = 60 \cdot 50 = 3000$

Hence, producer surplus is: $P^* \cdot Q^* - \int_0^{50} S(Q)\,dQ$.