

8. Correct. The answer is false. Long run price in a constant cost industry should be at the minimum of the average total cost curve. Since $TC = Q^3 - 25Q^2 + 200Q$, then $ATC = (Q^3 - 25Q^2 + 200Q)/Q = Q^2 - 25Q + 200$. ATC is minimized where $dATC/dQ = 2Q - 25$ or $Q = 12.5$. Second order conditions, $2Q > 0$, confirm it is a minimum. At $Q = 12.5$, the $ATC = 12.5^2 - 25 \cdot 12.5 + 200 = 43.75$. At a market price of 43.75, the total market $Q = 59.375 - 0.5 \cdot 43.75 = 37.5$. To satisfy total market quantity of 37.5, we would need $37.5/12.5 = 3$ firms would be able to produce at their optimal quantity 12.5 in this market.

