

7. Correct. The answer is true. $MR = 118.75 - 4Q = MC = 3Q^2 - 50Q + 200$ or $-3Q^2 + 46Q - 81.25 = 0$. We get two solutions to this equation applying the quadratic formula. $Q_1 = \frac{-46 - [46^2 + 4(-3)(-81.25)]^{0.5}}{2(-3)} = 13.30$ and $Q_2 = \frac{-46 - [46^2 - 4(-3)(-81.25)]^{0.5}}{2(-3)} = 2.04$. Second order conditions are $-6Q + 46 = -6(13.30) + 46 = -33.78 < 0$ (max) and $-6(2.04) + 46 = 33.78 > 0$ (min). So $Q = 13.3$, $P = 118.75 - 2 * 13.30 = \92.16 and profits = $13.3 * 92.16 - (13.3^3 - 25 * 13.3^2 + 200 * 13.3) = 635.21$.

