

40. Correct. The answer is false. Above the kink, OPEC's demand (Q_o) is world demand (Q_w) minus the supply of the fringe (Q_f) represented by the inverse marginal cost of the fringe. $Q_o = Q_w - Q_f = 25 - 0.2P - (-40+0.5P) = 65 - 0.7P$. Then inverse OPEC demand is $P = 92.857 - 1.429Q_o$ and $MR = 92.857 - 2.858Q_o$. Setting OPEC's marginal revenue equal to marginal cost $92.857 - 2.858Q_o = 10 + 0.5Q_o$. Solving yields $Q_o = 21.697$. Then $P = 92.857 - 1.429*21.697 = 21.697$. We need to check whether this production is to the left of the kink. The kink is at a price where the fringe produces nothing or where $P = 80 + 2*0 = 80$. World demand at a price of 80 is $Q_w = 25 - 0.2*80 = 9$. Since $Q_o = 21.697$ is greater than 9, we are not to the left of the kink. So now check to the right of the kink, where the fringe is out of the market and OPEC faces world demand. Set OPEC's marginal revenue from world demand ($125-10Q$) equal to OPEC's marginal cost ($20+0.5Q_o$). Solving yield $Q_o=10$. Since Q_o is to the right of the kink, this is the solution. At this quantity world price is $125-5*10=75$. The price is too low and the fringe produces nothing. OPEC's profits are:

$$P * Q_o - \int_0^{Q_o} MC_o = 75 * 10 - \int_0^{10} (20 - 0.5Q_o) dQ_o = 525$$

