1. Lawn mowing services are supplied by a host of individuals in the suburb of Westbrook. Demand and supply conditions in the perfectly competitive domestic for lawn mowing services are:

P = $75 - 1.75QD Demand

P = $2QS Supply

where P is price per lawn mowed and Q is quantity of lawns mowed per day.

a.) Algebraically determine the equilibrium industry price/output combination.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| P = $75 - 1.75Qd |  | **Qd = (-P + 75) / 1.75** |  | **Qs = P / 2** |
| Qd = (-P + 75) / 1.75 |  | Qd = (-40 + 75) 1.75 |  | Qs = 40 / 2 |
|  |  |  | Qd = 35 / 1.75 |  | Qs = 20 |  |
| P = $2Qs |  |  | Qd = 20 |  |  |  |  |
| Qs = P / 2 |  |  |  |  |  |  |
|  |  |  | **Equilibrium Price = $40** |  |  |
| Qs = Qd |  |  | **Equilibrium Quantity = 20** |  |  |
| P / 2 = (-P +75) / 1.75 |  |  |  |  |  |  |
| 1.75P = (-P + 75) / 2 |  |  |  |  |  |  |
| 1.75P = (-2P + 150) |  |  |  |  |  |  |
| 2P + 1.75P = 150 |  |  |  |  |  |  |
| 3.75P = 150 |  |  |  |  |  |  |
| P = 150 / 3.75 |  |  |  |  |  |  |
| **P = $40** |  |  |  |  |  |  |  |

b.) Confirm this by graphing industry demand and supply curves (Using excel). For the graph, use prices: 10, 20, 30, 40, 50, 60, 70, 80, 90 and Quantities: 5, 10, 15, 20, 25, 30, 35, 40, 45.

|  |  |  |  |
| --- | --- | --- | --- |
| **Price** | **Quantity** | **Demand** | **Supply** |
| 10 | 5 | 7.43 | 1 |
| 20 | 10 | 3.14 | 1 |
| 30 | 15 | 1.71 | 1 |
| 40 | 20 | 1.00 | 1 |
| 50 | 25 | 0.57 | 1 |
| 60 | 30 | 0.29 | 1 |
| 70 | 35 | 0.08 | 1 |
| 80 | 40 | -0.07 | 1 |
| 90 | 45 | -0.19 | 1 |

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