**Selected Problems - Chapter 12**

**2.2** (a) First, calculate *MP* and *MRP* (*P × MP)*

|  |  |  |  |
| --- | --- | --- | --- |
| Workers | Vegi-Dogs | *MP* | *MRP*  (*P* x *MP*) |
| 0 | 0 | --- | --- |
| 1 | 12 | 12 | 60 |
| 2 | 20 | 8 | 40 |
| 3 | 26 | 6 | 30 |
| 4 | 30 | 4 | 20 |
| 5 | 32 | 2 | 10 |
| 6 | 33 | 1 | 5 |
| 7 | 30 | −3 | −15 |

At a wage of $14 per hour, 4 workers should be hired. The fifth worker would produce less value in an hour ($10) than his/her wage.

(b) When the price of vegi-dogs rises to $9, the last column must be recalculated.

Now, 5 workers should be hired.

|  |  |  |  |
| --- | --- | --- | --- |
| Workers | Vegi-Dogs | *MP* | *MRP*  (*P* x *MP*) |
| 0 | 0 | --- | --- |
| 1 | 12 | 12 | 108 |
| 2 | 20 | 8 | 72 |
| 3 | 26 | 6 | 54 |
| 4 | 30 | 4 | 36 |
| 5 | 32 | 2 | 18 |
| 6 | 33 | 1 | 9 |
| 7 | 30 | −3 | −27 |

(c) If the wage rises to $20 per hour, assuming vegi-dogs still cost $9, only 5 workers should be hired. (If vegi-dogs still cost $5, as in the first example, only 4 workers would be hired.)

(d) Yes, the allocation of labor would be efficient because each firm would hire labor until the wage was equal to the value of the marginal revenue product. If all firms paid the same wage, they would all have the same marginal product of labor, and no reallocation of labor could increase total output.

**3.4** Items a, c, and d are public goods because they bestow collective benefits on members of society and no one is excluded from enjoying their benefits.

Items b, e, and f can be excluded from anyone who does not pay for their use, so they are not public goods.