

4. Consider the diagram to the right, which depicts the supply of broadband Internet service. The supply of broadband service is given by $Q^S = 12.5P - 150$, where Q is the quantity of services (in hundreds) and P is the price per month. Assume that the price of broadband service is \$25 per month. Determine the following, paying particular attention to the units in which quantity is denominated:

- The total number of services providers will supply at that price
- The total amount received by producers for that service, areas D and E
- The producer surplus received by suppliers, area D
- Recalculate producer surplus using calculus and confirm that your answer is the same as in part (c).
- Suppose that supply (in inverse form) is now $P = 5 + 0.05Q^2$, where quantity is still measured in hundreds. What is producer surplus?

