Price Elasticity of Supply (PES):

Price elasticity of supply (PES) measures the responsiveness of quantity supplied to a change in price. It is calculated as the percentage change in quantity supplied divided by the percentage change in price.

- Elastic Supply (|PES| > 1): When supply is elastic (|PES| > 1), it means that the percentage change in quantity supplied is greater than the percentage change in price. Producers can quickly and significantly increase or decrease the quantity supplied in response to price changes.
- Inelastic Supply (|PES| < 1): When supply is inelastic (|PES| < 1), it means that the percentage change in quantity supplied is less than the percentage change in price. Producers are not very responsive to price changes, and the quantity supplied changes by a smaller percentage compared to the change in price.
- Unitary Elastic Supply (|PES| = 1): When supply is unitary elastic (|PES| = 1), the percentage change in quantity supplied is exactly equal to the percentage change in price.

Total Revenue and Price Elasticity of Supply:

Total revenue for producers is calculated as the price of the good multiplied by the quantity sold. Mathematically,

$$\text{Total Revenue} = \text{Price} \times \text{Quantity Sold}$$

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Relationship between Price Elasticity of Supply and Total Revenue:

- Elastic Supply: When the price of a good increases (and supply is elastic), producers can significantly increase the quantity supplied. As a result, the total revenue (price multiplied by quantity) may increase, as the increase in quantity supplied can offset the decrease in price.
- Inelastic Supply: When the price of a good increases (and supply is inelastic), producers are not able to increase the quantity supplied by much. In this case,

total revenue may decrease, as the decrease in quantity supplied cannot offset the increase in price.

- Unitary Elastic Supply: When supply is unitary elastic, a change in price will result in no change in total revenue.

Applying to the Scenario:

In the given scenario, if the price elasticity of supply is 3 (indicating elastic supply) and the price of the good increases:

- Producers can increase the quantity supplied significantly in response to the price increase.
- This increase in quantity supplied can lead to an increase in total revenue.

In summary, when the price elasticity of supply is 3 and the price of the good increases, total revenue for producers will likely increase due to the elastic nature of supply, allowing them to respond effectively to price changes by adjusting the quantity supplied.