Find the rate of change of total profit, in dollars, with respect to time where
$R(x) = 90x - 0.5x^2$ and $C(x) = 20x + 2$, when $x = 28$ and $\dfrac{dx}{dt} = 90$.

producy
&
selly

(a)
90 per
time
interval

[   ] Select an answer ∨

$$\text{Total profit} = \text{Revenue} - \text{Cost}$$

$$\text{Total profit} = R(x) - C(x)$$

$$= 90x - 0.5x^2 - 20x + 2$$

$$= 70x - 0.5x^2 + 2$$

$$\frac{d}{dt}P = \frac{d}{dt} \, 70x - 0.5x^2 + 2$$

$$= 70\frac{dx}{dt} - x \cdot \frac{dx}{dt} + 0$$

$$= 70 \cdot 90 - (28 \cdot 90)$$

$$= 3780$$