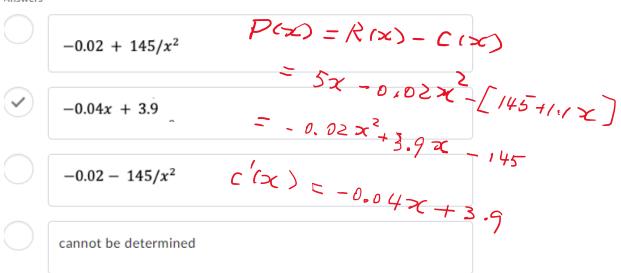
Daily Quiz #10: Applications of Derivatives and Derivative of Implicit Function Problem 1.

Given $R(x) = 5x - 0.02 x^2$, C(x) = 145 + 1.1 x, find the marginal profit function.

Answers *



Problem 2.

Given revenue function $R(x) = -0.03x - 3x^3$, find the marginal revenue function.

Answers *

$$-0.03 - 3x^{2} \qquad \mathcal{R}(x) = [-0, 03 \times -3 \times^{3}]$$

$$-0.03x + 9x^2$$

$$-0.03x + 9x^2$$

Problem 3.

Given cost function C(x) = 175 - 0.8x. What is the marginal cost function?

Answers *

$$C'(x) = (175 - 0.8x)$$

Problem 4.

The production cost per week for producing x widgets is given by, C(x) = 500 + 350x - 100 $0.09x^2$ for $0 \le x \le 1000$.

What is the marginal cost at x = 300?

cannot be determined

Answers 1 C(X) = [500+350X+0.09x2] 296 = 500'+ 350 oc - 0,09 (x2) 97400 325 = 350 - 54 = 296

Problem 5.

Find y' = dy/dx if $x^2 - y^2 = 1$.

(22-72)=1

Answers *



Problem 6.

Find the derivative of y from the implicit function: $3xy + y^2 = 0$.

Answers* $(3 \times 4 + 2)' = 0'$ $3(xy)' + (y^2)' = 0$

$$\frac{-2y/3x}{} = \frac{3 \left[y + x y' \right] + 2 b b' = 0}{}$$

Problem 7

Find the derivative of y given that $x^2 + 2xy + y^2 = 1$.

 $(x^2 + 2xy + y^2)' = 1'$ Answers * $(x^2)' + 2(xy)' + (y^2)' = 0$ -1 2x +2/x'y+xy'] +24y'=0 -1/(x + y)=> (x+4) + (x+4) y'= 0

Problem 8

Suppose that a 2% increase in price results in a 6% decrease in quantity demanded. Own-price elasticity of demand is equal to:

Answers *

percent change in demand

percent change in price 1/3

2

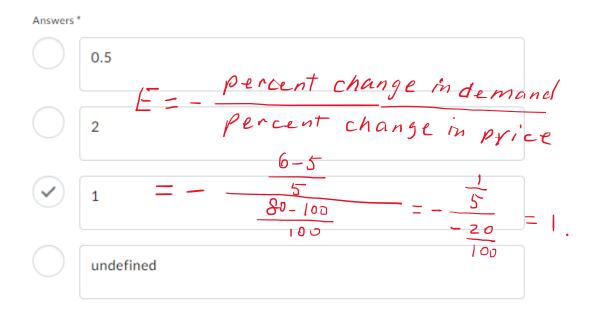
Problem 9

The price decreases from £2,000 to £1,800. Quantity demanded per year increases from 5000 to 6000 units. Which of the following is correct? (use the definition in lecture note or the textbook)

Answers *		
	The price elasticity of demand is -1	
		percent change in demand
	The good is inferior	Percent Change in price
\checkmark	Income elasticity is + 0.5	
		6000 - 5000
	Income elasticity is + 2	5000 1 500

Problem 10

The price of a commodity rises from 5 to 6 and as a result its demand falls from 100 to 80 units. Find the price elasticity of demand using percentage method



Problem 11.

When the price decreases from \$12 to \$6 (50%), the quantity of demand increases from 40 to only 50 (25%). The elasticity coefficient is