ECO256

A production function exhibits _____ return to scale if when all inputs are increased by a given proportion K, output increases by the same proportion

Constant

If output increases by a proportion greater than K, there are _____ returns to scale

Increasing

If the output increases by a proportion smaller or lesser than K, there are _____ returns to scale

Diminishing

If the production function is homogeneous of degree greater than, equal to or less than 1, returns to scale are increasing, constant or _____

Diminishing

A strict cobb-douglas production function in which $\alpha+\beta= 1$, exhibits _____ returns to scale

Constant

A production in which $\alpha+\beta>1$, and $\alpha+\beta<1$ exhibits _____ and diminishing respectively returns to scale respectively

Increasing

Given the production function as $Q = 6x^2 + 3xy + 2y^2$. The marginal productivity of factors x & y are _____ and 3x+4y respectively

12x+3y

Given the cob-douglas production function as $Q = 0.5K^2 - 2KL + L^2$, the marginal productivity of capital and labour respectively are _____ and 2L - 2K

K-2L

Multiplication of matrices with dimensions $(rXc)_1$ and $(rXc)_2$, requires that the matrices must be _____

Conformable

The determinant /A/ of a 2x2 matrix called a _____ determinant is derived taking the product of the two elements on the principal diagonal and subtracting from it the product of the two elements off the principal diagonal.

Second-order

The element of matrix remaining after the deletion process form a sub-determinant of the matrix is called _____

Minor

The method for evaluating determinant in terms of cofactor is called _____ expansion.

Laplace

_____ is a matrix in which every element a_{ij} is replaced with its cofactor

Matrix inversion

_____ is the transpose of a cofactor matrix

Adjoint matrix

The _____ Provides a simplified method of solving a system of linear equations through the use of determinants

Cramer's rule

The _____ Determinant permits testing for functional dependence, both linear and nonlinear. It is composed of all the first order partial derivatives of a system of equations arranged in ordered sequence.

Jacobian
The value of the _____ determines the size of multiplier Given the the objective and constraint functions as Z = 4x2 - 2xy + 6y2 subject to x+y = 72. What is the value of the multiplier (λ)?

276
Given the objective and constraint functions as Z = 4x2 - 2xy + 6y2 subject to x+y = 72. The value of x & y are 42 and _____ respectively

30
Given the income equation as C=102+0.7y, I=150-100i, Ms=300, Mt=0.25y and Mz=124-00i. What is the level of interest rate?

i=0.12
Given the income equation as C = 102+0.7y, I = 150-100i, Ms = 300, Mt = 0.25y and Mz = 124-00i. The corresponding level of consumption and investment are -_____ and 138 respectively?

662
Given the income equation as C = 102+0.7y, I = 150-100i, Ms=300, Mt = 0.25y and Mz = 124-00i. The corresponding level of income and money supply are 800 and _____ respectively?

300
Given the differential function as Y= (3x4+5)6. Using the chain rule the derivative dy/dx for the function is _____

72x3(3x4+5)5
Given the function as y=7x3+5x2+12. Find the second order derivative d2y/dx2

42x+10
If f(x) = x6+3x4+x. find the second order derivative and evaluate it at x=2

94
Use the rules of implicit differentiation to find dy/dx for the function y=f(x)=x4y6=89.

dy/dx= -2y/3x
Given the total revenue function as TR=30Q-2Q2. The values of marginal revenue MR if Q=4 and Q=5 are _____ and 10 respectively

14
Given the TR function as R=4000Q-33Q2 and the total cost as C=2Q3-3Q2+400Q+5000 assuming Q>0. What is the profit function (π)?

-2Q3-30Q2+3600Q-5000
The integral of sum or difference of two or more function is the sum or difference of the individual integral. True or False? _____

True
he production function q=AKαLβ is a typical _____ production function

Cobb-Douglas
When the second derivative of any function equals zero, the _____ occurs

inflection point
In matrix operation, any matrix of 2 by 3 order means _____

Two rows and three columns
When the first derivative of an economic model is zero or undefined, the model is therefore _____

Critical
The concept of Derivative is about _____

Rate of change
Differentiation is a primitive function in calculus. True or False _____

FALSE
The integral of sum or difference of two or more function is the sum or difference of the individual integral. True or False? _____

True
A continuous function is one which has……………….. in its curve. It can be drawn without lifting the pencil from the paper.

No breaks

The process of finding the derivative of a function is known as

Differentiation

A tangent is a straight line that touches a curve at

Only one point

A function is said to be ………….. at a point if the derivative exists at that point

Differentiable

……………….. is a square matrix which has 1 for every element on the principal diagonal from left to right and 0 everywhere else

Identity

A function f(x) is……….. at x=a if some small region close to the point [a,f(a)] the graph of the function lies completely above its tangent line

convex

A function f(x) is said to be……….. at x=a if in the immediate vicinity of the point [a,f(a)] the graph of the function rises (fall) as it move left to right.

Increasing/decreasing respectively

A point at which a function is at relative maximum or maximum is called

A relative extremum

A point in the domain of a function where the derivative equals zero or is undefined is called a

intercept

An inflection point is a point on………. Where the function crosses its tangent and changes from concave to convex or vice-versa

graph

The process of finding the relative maximum or minimum of a function is known as

optimization

Reversing the process of differentiation and finding the original function from

the derivative is called

integration

In the integration, the original function f(x) is called the

Integral or anti derivative

Suppose a firm faces a demand curve for its product P = a - bQ, and the firm's costs of production and marketing are C(Q) = cQ + d, where P is price, Q is quantity, and a, b, c, and d are positive constants. Find the second order condition (SOC) for maximum profit

$d^2\Pi/dQ^2 = -2b < 0$,

Suppose the firm faces a demand curve for its product P = 32 - 2Q, and the firm's costs of production and marketing are C(Q) = 2Q2. Find The price and quantity that maximize profit, and the corresponding value of profit.

Q=4, P=24 and Π = 64. respectively

………….. is a rectangular array of numbers or variables or parameters each of which has a carefully ordered place within the matrix

matrix

The numbers or parameters in the matrix are referred to as……… of the matrix

elements

The policy that deals with the use of government expenditure and tax to control economic performance is _____

Fiscal

The numbers in in a horizontal and vertical line are called………..

Rows and columns respectively

The dimension of a matrix is defined by the number of…..……..

Number of rows and columns

In a matrix whose number of rows are equals to the number of columns s called……

Square matrix

If a matrix is composed of single column such that its dimension is r*1 it is called a………..

Column vector

A matrix which converts the rows of A to columns and the columns of A to rows is called………

Transpose of A, A'

Addition and subtraction of Two matrices A&B requires that, the two matrices are of……….

Equal dimensions

The process of multiplying every element of a matrix by a number is called a………………multiplication

Scalar

……………….. is a square matrix which has 1 for every element on the principal diagonal from left to right and 0 everywhere else

Identity

Given the total cost function as $TC=3Q^2+7Q+12$. Find the MC function

$MC=6Q+7$

Given the total cost function as $TC=3Q^2+7Q+12$. Find the AC function

$AC= TC/Q= 3Q+7+12/Q$

Given the total cost function as $TC=3Q^2+7Q+12$. Find the value of MC, when Q= 3 and 5 respectively

25 & 37 respectively

Given the total cost function as $TC=3Q^2+7Q+12$. Find the value of AC function when Q=3 and 5 respectively

20 & 24.4 respectively

Given that, $C=200+0.9Y_d$, where $Y_d=Y-T$, and $T=300+0.2Y$, use the derivative to find the value of marginal propensity to consume MPC

$MPC= dc/dy= 0.72$

Given the total revenue function as $TR=32Q-Q^2$ find the critical value and maximum profit at the critical values respectively

16 & 256 respectively

Given the $TR= 1400Q-6Q^2$ and $TC=1500+80Q$. test the first and second order condition for the profit function respectively.

$\Pi'= -12Q+1320=0$ and $\Pi''= -12<0$ respectively

A monopolist faced with two distinct demand functions as $Q_1= 24-0.2P_1$ and $Q_2= 10-0.05P_2$, where $TC=35+40Q$. What prices will the firm charge with discrimination?

$P_1=80$ & $P_2=120$ RESPECTIVELY

A monopolist faced with two distinct demand functions as $Q_1= 24-0.2P_1$ and $Q_2= 10-0.05P_2$, where $TC=35+40Q$. What prices will the firm charge without discrimination? Note that without discrimination $P_1=P_2$

$P=88$