

SIMPLE AND COMPOUND INTEREST

1	If Rs. 1000 amounts to Rs1320 at simple interest in 4 years, find the rate of interest. Also find how much Rs. 400 will appreciate in 6 years if kept at the same interest.
	Find the amount received when a sum of Rs 12000 is invested at 8% per annum for 2 years, if interest is compounded Half yearly b. quarterly
	If Rs. 5000 amounts to Rs. 6,200 at simple interest in 4 years, find the rate of interest.
	Find the amount received when a sum of Rs 20000 is invested at 8% per annum for 3 years, if interest is compounded Half yearly b. quarterly
	If Rs. 50,00 amounts invested at simple interest 6% in 5years, find the amount.
	Raj lent his friend Rs15,000 at a token interest of 3% per annum to be compounded half yearly. Calculate the amount due to him at the end of a years
	What principal will yield Rs.3000 as simple interest at 6% per annum in 5 years?
	Find the amount and the compound interest on Rs. 1500 for 4 years at 12% calculated on yearly basis.
	What principal will yield Rs.3000 as simple interest at 6% per annum in 5 years?
	Find the amount and the compound interest on Rs. 1500 for 4 years at 12% calculated on yearly basis.
	Find the amount of an annuity of Rs.1500, payable at the end of each half year for 8 years, the interest rate being 14% compounded half-yearly.
	What is the EMI on Rs.40,000 at 5% for 15 years using (i) Interest on reducing Balance Method (ii) Flat Interest rate Given that
	Find the amount of an annuity of Rs. 15000 payable at the end of each quarter for 2years, the interest rate being 9% , compounded quarterly.
	A person borrowed Rs. 75000 at 12% p.a. if he wishes to return the sum within 1 year Find his EMI using a) interest on Reducing Balance Flat interest Rate for

Fy bcom- sem-ii derivative and application

- Q 1 If $y = 4$ then $dy/dx =$ 1
- a) 0
 - b) 1
 - c) -1
 - d) 4
- 2 If $y = x^n$ then dy/dx is 1
- a) X^{n-1}
 - b) nX^{n-1}
 - c) $n X^{n+1}$
 - d) $(n-1) X^{n-1}$
- 3 If $y = e^x$ then dy/dx is 1
- a) 1
 - b) 2
 - c) 0
 - d) e^x
- 4 If $y = \log x$ the $dy/dx =$ 1
- a) $1/x$
 - b) X
 - c) $-1/x$
 - d) 1
- 5 If $y = a^x$, dy/dx 1
- a) a
 - b) a^x
 - c) $a^x \log a$
 - d) $a^x \log x$
- ans : c
- 6 If $y = u+v$ then
- a) $dy/dx = du/dx$
 - b) $dy/dx = du/dx + dv/dx$
 - c) $dy/dx = dx/du + dx/dv$
 - d) $dy/dx = dv/dx$
- Ans: b
- 7 If $y = u.v$ then
- a. $dy/dx = u.dv/dx + v.du/dx$
 - b. $dy/dx = u.dv/dx - v.du/dx$
 - c. $dy/dx = udu/dx + v.dv/dx$
 - d. $dy/dx = v.dv/dx + udu/dx$
- ans: a
- 8 If $y = x^4 + \log x - 3^x$ then $dy/dx =$
- a. $4x^3 + 1/x - 3^x \log 3$
 - b. $4x^3 + 1/x + 3^x \log 3$
 - c. $x^3 + 1/x - 3^x \log x$

d. $x^3 + 1/x + 3^x \log 3$

Ans = a

9 $Y = 1/x$ then $dy/dx =$

2

- a. $\log x$
- b. $1/x^2$
- c. $-1/x^2$
- d. 1

10 $Y = x$ then $dy/dx =$

- a. 1
- b. 0
- c. X^2
- d. $2x$

Ans a

11 If $y = 2x^2 + x + 1$, then $dy/dx =$

- a. $4x + 1$
- b. $4x^2 + 1$
- c. $4x$
- d. 1

Ans : a

12 $Y = e^x \log x$ then dy/dx

2

- a. $e^x 1/x$
- b. $e^x + 1/x$
- c. $e^x 1/x + e^x \log x$
- d. $e^x = \log x$

Ans : c

13

$Y = x \log x$

- a. $1 + \log x$
- b. $1 - \log x$
- c. 1
- d. $1/x$

Ans: a

14 If supply function is $S = 2x^3 + 4x^2 - 1$ then marginal supply function is

- a. $x^3 + x^2 - 1$
- b. $6x^2 + 8x$
- c. $6x + 8x - 1$
- d. $2x^3 + 4x^2 - 1$

Ans : b

15 Find d^2y/dx^2 of $y = 7x^3 + 2x^2 + 2x$

- a. $21x^2 + 4x + 2$
- b. $42x$
- c. $42x + 4$
- d. $43x + 2$

Ans: c

16 Find $\frac{d^2y}{dx^2}$ of $y = x^2 + 2x + 2$

- a. $2x+2$
- b. 2
- c. 1
- d. 0

Ans : b

17 The demand function $D = 1+4p-p^3$ then marginal demand function at $p = 1$ is

- a. 0
- b. -1
- c. 1
- d. 10

Ans: c

18 The cost of manufacturing x items is $C = x^2 - 5x + 7$. Then marginal cost of manufacturing 10 items is

- a. 57
- b. 15
- c. 10
- d. 20

Ans b`

19 If total cost $C = x^3 + x^2 + 20x$ then marginal average cost at $x = 10$ is

3

- a. 21
- b. 20
- c. 340
- d. 70

Ans: 21

20 Elasticity =

1

- a. $-\frac{P}{D} \cdot \frac{dD}{dP}$
- b. $\frac{P}{D} \frac{dD}{dp}$
- c. $\frac{D}{p} \frac{dD}{dP}$
- d. $\frac{D}{p} \frac{dD}{Dp}$

Ans: a

21

For the demand law $D = 3/p^5$ then price elasticity is

- a. 5
- b. 3
- c. 1
- d. 2

Ans : a

22 If elasticity = 0 then

1

- a. Demand is said to be perfectly inelastic
- b. Demand is directly proportional to price
- c. Demand is elastic
- d. Demand is said to be perfectly elastic.

Ans : d

- 23 The price of a chair is given by $x = 4p - 1$, where x is number of chairs produced. What is marginal revenue function when $p = 4$
- a. 4
 - b. 32
 - c. 31
 - d. 30

Ans : c

- 24 If $MR = 40$, $AR = 60$, then elasticity 3
- a. 2
 - b. $3/2$
 - c. $2/3$
 - d. $1/2$

Ans a

- 25 $F(x)$ has maximum value at $x = a$ if 2
- a. $F'(x) = 0$
 - b. $F'(x) > 0$
 - c. $F'(x) = 0$ and $f''(x) > 0$
 - d. $F'(x) = 0$ and $F''(x) < 0$

Ans : d

- 26 $F(x) = x^2 + 10x + 15$ has minimum value at ____
- a. 5
 - b. 2
 - c. -5
 - d. -2

Ans: - 5

- 27 A firm produces an output of x tones at a total cost $C = x^2 - 4x$ find the output a which cost is minimum.

- a. 4
- b. -2
- c. 2
- d. -4

Ans: c 2

- 28 The extreme value of function $f(x) = 3 + 4x - x^2$ is 3
- $X = 2$, max
 - $X = 2$, min

Min =max

X=6 max

Ans ; a

29 If $y = e^x$, then $\frac{d^{10}y}{dx^{10}}$ is

- a. e^x
- b. $10 e^x$
- c. e^{10x}
- d. xe

Ans : a

30 Total cost of x items is given by $C = 15 e^x + 2$. What is the marginal cost when $x = 3$?

- a. 15
- b. 5
- c. $15e^3$
- d. 45

Ans : c

31 $Y = \frac{x}{33^x}$ the $\frac{dy}{dx} =$

$\frac{1}{33}$

1

$\frac{1}{33^x}$

$\frac{1}{33^x}$

3

Ans d

32

$Y = \frac{\log x}{x}$ then $\frac{dy}{dx} =$

$\frac{(1-\log x)}{x^2}$

$\frac{(1+\log x)}{x^2}$

$\frac{(1+\log x)}{x}$

$\frac{(1-\log x)}{x}$

Ans a

33

$Y = \log 34$, $\frac{dy}{dx} =$

- a. $\frac{1}{34}$
- b. 1

1

c. -1

d. 0

Answer 4

34 $Y = 8^x \log x$, $dy/dx =$

2

a. 8

b. $8/x$

c. $8^x/x + x8^x \log 8$

d. $8^x/x + x8^x \log x$

Ans : c

35 If $MR = 20$ and elasticity of demand w.r.t price is 2 then the price is

3

a. 20

b. 40

c. -40

d. 10

Answer: b

36 The total cost of manufacturing x items in a day is Rs. $(x/3 + 48/x + 100)$. How many items must be produced daily to minimize the total cost?

a. 11

b. 12

c. 13

d. 14

Answer2 a

37 Function $f(x)$ has extreme value only if

2

1. $F'(x) > 0$

2. $F'(x) < 0$

3. $F'(x) = 0$

4. $F''(x) = 0$

Answer3

38 If $y = u + k.v$, k is constant then $dy/dx =$

2

1. $du/dx + dv/dx$

2. $du/dx - dv/dx$

3. $du/dx + k dv/dx$

4. $du/dx - k. dv/dx$

39

$Y = x^4 - 4x$ then minimum value of the function is at

1. 1

2. -1

3. 0

4. 4

Answer1

40 Relation between marginal revenue MR and elasticity is

2

1. $MR = p (1 - 1/)$

2. $MR = p (1 + 1/)$

3. $= p (1 + 1/MR)$

4. $= p (1 - 1/MR)$

Answer1