1 – If $5^{X-3} = 4^{X-3}$, then x = ……

a – $\dfrac{5}{4}$ **b – 3** **c – zero** **d – 1**

2 – $\sqrt[5]{a^3} \times \sqrt{a^3} = $ ………

a – $\sqrt[7]{a^3}$ **b –** $\sqrt[7]{a^6}$ **c –** $\sqrt[7]{a^{14}}$ **d –** $a^2\sqrt[10]{a}$

3 – If $\left(\dfrac{2}{3}\right)^{x-2} = \dfrac{8}{27}$, then x = ……

a – 2 **b – 3** **c – 4** **d – 5**

4 – The simplest form $\dfrac{10^{2x+1} \times 2^{2x}}{4^x \times 25^{x+\frac{1}{2}}}$

a – 2^{2x+1} **b –** 2^{x+2} **c –** 2^{x-2} **d –** 2^{2x+2}

5 – $2 \times 4^{x-3} = 16$, then x = ………

a – 5 **b – 7** **c –** $4\dfrac{1}{2}$ **d –** $-1\dfrac{1}{2}$

6 – If $2^{x-1} = 44$, then $2^{x-2} = $ ………

a – 18 **b – 22** **c – 10** **d – 16**

7 – If $5^{2x-1} = \dfrac{1}{125}$, then x = ………

a – 1 **b – zero** **c – -1** **d – -2–**

8 – If $5^x = 2$, then $(25)^x = $ ………

a – 10 **b – 625** **c – 4** **d – 2**

9 – The solution set of equation $3^x + 3^{3-x} = 12$ **is ......**

a – $\{1, 2\}$　　　**b –** $\{0, 3\}$　　　**c –** $\{3, 4\}$　　　**d –** $\{-1, -2\}$

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10 – The solution set of equation $\sqrt[3]{x^3} - 3\sqrt[3]{x} + 2 = 0$ **Is ....**

a – $\{1, 8\}$　　　**b –** $\{9, 3\}$　　　**c –** $\{8\}$　　　**d –** $\{1\}$

---

11 – If $f(x) = 3^x$ **, then the value of x which satisfy the equation** $f(x + 1) - f(x - 1) = 24$ **is ....**

a – zero　　　**b – 2**　　　**c – 3**　　　**d – 8**

---

12 – If $f(x) = 3^x$ **the value of x which satisfy the relation** $f(2x) - 24f(x - 1) - f(2) = 0$ **is ....**

a – $2, \dfrac{1}{3}$　　　**b –** $2, zero$　　　**c –** 2　　　**d –** $2, -1$

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13 – The solution set of equation $\log_x 81 = 4$ **in R is .....**

a – $\{-3\}$　　　**b – 3**　　　**c –** $\{3, -3\}$　　　**d –** $\{9\}$

---

14 – The form $\log_a x = y$ **is equivalent to ....**

a – $\log_a y = x$　　　**b –** $a^y = x$　　　**c –** $a^x = y$　　　**d –** $y = a^x$

---

15 – The S.S of the equation $\log_x(x + 6) = 2$ **in R is ......**

a – $\{3, -2\}$　　　**b –** $\{3\}$　　　**c –** $\{3, 1\}$　　　**d –** $\{6, 1\}$

---

16 – If $\log_9 \sqrt{x + 7} = \dfrac{1}{2}$ **, then x = ...**

a – 2　　　**b – 4**　　　**c – 6**　　　**d – 8**

17 – $\log_2 5 \times \log_5 2 = \dots\dots$

a – 1   **b – 10**   **c –** $\log_2 10$ **d –** $\log_5 10$

18 – If $\log_2 x = 3$ **, then** $\log_8 x = \dots\dots$

a – 8   **b – 4**   **c – 2**   **d – 1**

19 – If $3^x = 5$ **, then** x = $\dots\dots$

a – 3   **b –** $\log_3 5$ **c –** $\log_5 3$ **d –** $\dfrac{5}{3}$

20 – The simplest form of expression

$\log_b a^2 \times \log_c b^3 \times \log_a c = \dots\dots$

a – 2   **b – 3**   **c – 6**   **d – 1**

21 – The solution set of the equation

$2\log 2 - \log x = \log(x + 3) - \log 7$

a – $\{7\}$ **b –** $\{4\}$ **c –** $\{7, 4\}$ **d –** $\emptyset$

22 – If $\log_2 x + \log_2 x^2 = 6$ **, then** x = $\dots\dots$

a – 2   **b – 4**   **c – 6**   **d – 216**

23 – If $\log_2 x + \log_2(x + 2) = 3$ **,**   x = $\dots\dots$

a – 2   **b – -2**   **c – 3**   **d – -3**

24 – The S.S of $\log_3(x + 6) = 2\log_3 10$ **, the x =** $\dots\dots$

a – 3   **b - -3**   **c – 6**   **d - -6**

25 – If $3^{x+2} = 6$ **, the value of x to two decimals is ....**

a – 0.37   **b – - 0.37**   **c – 0.73**   **d – 0.73**

26 – If $3^{2x-3} = 11^{1-x}$ **, the value of x to two decimals is**

a – 1.24   **b – 1.42**   **c – 2.14**   **d – 2.41**

27 – If $4 \times 7^{x-2} = 1$ **, the value of x = ...**

a – 1.29   **b – 1.92**   **c – 2.19**   **d – 2.91**

28 – If $3^{5x-2} = 7^{x+1}$ **, then x = ...**

a – 7.71   **b – 7.11**   **c – 1.17**   **d – 1.71**

29 – The numbers of ways of forming 2 – digit number out of $\{3, 4, 5, 6, 7\}$ **equals ....**

a - 2^5 **b –** 5^2 **c –** $^5P_2$ **d -** $^5C_2$

30 – By how many ways can Hossam select a meal and drink from different meals (meat – chicken – fish) and two kinds of drinks (juice – Cocacola) ?

a - 3^2 **b -** $^3C_2$ **c –** $3! \times 2!$ **d -** $^3P_2$

31 – The numbers of 2 different digit even numbers which formed 1,2,3,4,5,6 equal ......

a – 5   **b – 6**   **c – 9**   **d – 15**

32 – The numbers of 3 different digit greater than 400 formed 3, 4, 5, 6, 7

a – 12   **b – 16**   **c – 48**   **d – 60**

33 – By how many ways can 7 children be arranged in a circle ?

a – $7!$ **b -** $6!$ **c -** 7^2 **d -** 2^7

34 - By how many ways can 5 children be arranged in one row ?

a – $5!$ **b –** $4!$ **c -** 5^2 **d -** 4^2

35 - The numbers of ways of selecting a team of 6 numbers from 12 for sons equals ....

a – $^{12}P_6$ **b –** $^{17}C_6$ **c –** $^{12}C_6$ **d –** $^{17}C_{12}$

36 – If n! = 720 , then $^np_2$ = ...

a – 30 **b – 20** **c – 15** **d – 12**

37 – If $^nC_5 = {}^nC_6$, then n = ...

a – 5 **b – 6** **c – zero** **d – 11**

38 – If $^nC_5 = {}^nC_{n-2}$, then n = ...

a – 6 **b – 7** **c – 8** **d – 10**

39 – If $^nC_9 : {}^nC_7 = 7 : 9$, then n = ...

a – 7 **b – 15** **c – 16** **d – 9**

40 - The numbers of ways of selecting a group of 3 girls and 4 boys from 5 girls and 7 boys equals ....

a – $^5P_3 \times {}^7P_4$ **b –** $^7P_3 + {}^5P_4$ **c –** $^5C_3 \times {}^7C_4$ **d -** $^5C_3 + {}^7C_4$

1 – prove that : $\dfrac{(343)^{2x-\frac{1}{3}} \times (4)^{3x+1}}{(196)^{3x} \times 4} = \dfrac{1}{7}$

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2 – Find in R the solution set of equation :

$$x^{\frac{4}{5}} - 5x^{\frac{2}{5}} + 4 = 0$$

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3 – Find the value of x to the nearest two decimal places where :

$$7^{3x-2} = 5$$

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4 – Find the value of (n) if :

$$^{25}C_{3n-5} = {}^{25}C_{2n}$$

---

5 – If $^{9}P_{r-1} = 504$ **, then find the value of** $(r+3)!$

Model answer for question bank

1-B	2-D	3-D	4-A
5-C	6-B	7-C	8-C
9-A	10-A	11-B	12-B
13-B	14-B	15-B	16-A
17-A	18-D	19-B	20-A
21-B	22-B	23-A	24-A
25-B	26-A	27-A	28-C
29-B	30-D	31-D	32-C
33-A	34-A	35-C	36-A
37-D	38-B	39-B	40-D

1) prove that $\dfrac{(343)^{2x-\frac{1}{3}} \times (4)^{3x+1}}{(196)^{3x} \times 4} = \dfrac{1}{7}$

Solution:

$$\dfrac{7^{6x-1} \times 2^{6x+2}}{2^{6x} \times 7^{6x} \times 2^{2}}$$

$$7^{6x-1-6x} \times 2^{6x+2-6x-2} = 7^{-1} = \dfrac{1}{7}$$

Find in R the solution set of equation

$$x^{\frac{4}{5}} - 5x^{\frac{2}{5}} + 4 = 0$$

Solution:

$$(x^{\frac{2}{5}} - 4)(x^{\frac{2}{5}} - 1) = 0$$

$$x^{\frac{2}{5}} = 4 \qquad\qquad x^{\frac{2}{5}} = 1$$

$$x = \pm(4)^{\frac{5}{2}} \qquad (\quad x = \pm(1)^{\frac{5}{2}}$$

$$x = \pm 32 \qquad\qquad x = \pm 1$$

$$S.S = \{ 1, -1, 32, -32 \}$$

Find the value of x to the nearest two decimal places where

$$7^{3x-2} = 5$$

Solution:

$$(3x-2)\log 7 = \log 5$$

$$3x - 2 = \frac{(\log 5)}{(\log 7)}$$

$$3x - 2 = \log\frac{5}{7}$$

$$3x = \log\frac{5}{7} + 2$$

$$3x = 2.8708$$

$$x = 0.96$$

Find the value of n if

$$^{25}C_{3n-5} = {}^{25}C_{2n}$$

Solution

$$3n - 5 + 2n = 25$$
$$5n = 30$$
$$n = 6$$

---

if $^9P_{r-1} = 504$, then find the value of $\lfloor r+3$

Solution:

$$^9P_{r-1} = 504$$

$$r - 1 = 3$$

$$r = 4$$

$$\lfloor 4+3 = 5040$$