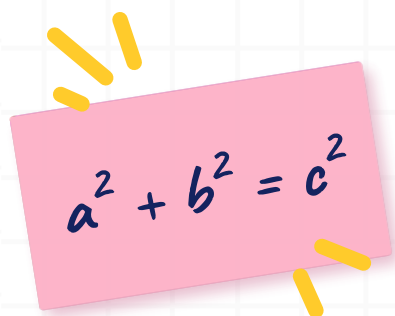
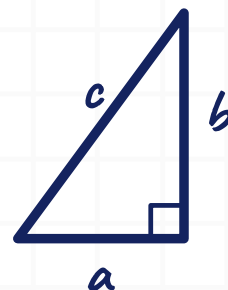
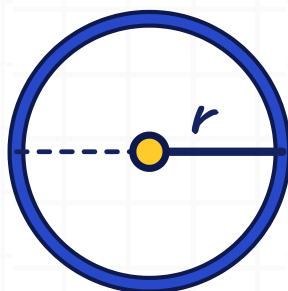


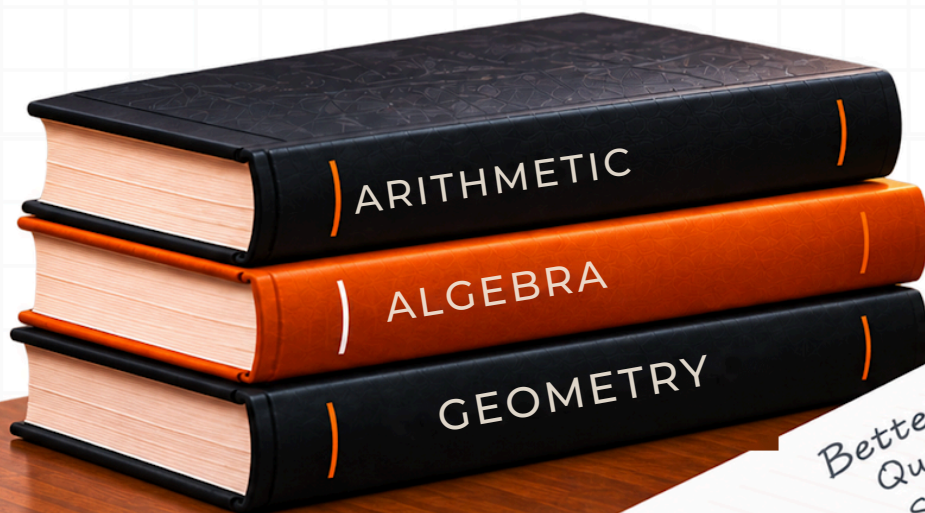
CAT PYQ

Logarithms


$$a^2 + b^2 = c^2$$



$$\underline{D = S \times T}$$



43 Questions

Quantitative Aptitude

Years: 1994-2025

General Instructions

- (i) This collection contains **43 Quantitative Aptitude questions** classified under **Logarithms**, following the supplied CD PYQ sheet.
- (ii) **Coverage:** CAT 1994-2025. Questions are grouped by their source year and sitting, with continuous numbering from **1 to 43**.
- (iii) This collection has **32 multiple choice questions (MCQs)** and **11 Type In The Answer (TITA) questions**. Read every option before choosing the answer. Enter a response for questions marked "Type in the answer."
- (iv) Original mathematical expressions, question wording and option order are retained. Use the diagrams and data provided with each question.
- (v) Each question carries its original year or exam date, sitting where available, and source question number. References distinguish the two CAT 2003 sittings.
- (vi) Use this collection for practice. Follow the timing and marking scheme of the original sitting when attempting a timed exercise.
- (vii) Answer keys and solutions are not included. Passages and questions may continue onto the following page.

CAT 2025 Slot 1 - Questions 1-1

1. The number of distinct integers n for which $\log_{\frac{1}{4}}(n^2 - 7n + 11) > 0$, is

30 Nov 2025, Slot 1, Q53

(A) 2

(B) infinite

(C) 1

(D) 0

CAT 2025 Slot 2 - Questions 2-2

2. If $\log_{64} x^2 + \log_8 \sqrt{y} + 3 \log_{512} (\sqrt{y}z) = 4$, where x,y and z are positive real numbers, then the minimum possible value of $(x + y + z)$ is

30 Nov 2025, Slot 2, Q54

(A) 48

(B) 36

(C) 24

(D) 96

3. The sum of all possible real values of x for which $\log_{x-3}(x^2 - 9) = \log_{x-3}(x + 1) + 2$, is

30 Nov 2025, Slot 3, Q61

(A) -3

(B) $\sqrt{33}$

(C) 3

(D) $\frac{3 + \sqrt{33}}{2}$

CAT 2024 Slot 1 - Questions 4-4

4. If x is a positive real number such that $4 \log_{10} x + 4 \log_{100} x + 8 \log_{1000} x = 13$, then the greatest integer not exceeding x , is

24 Nov 2024, Slot 1, Q59

Type in the answer.

CAT 2024 Slot 2 - Questions 5-5

5. If a , b and c are positive real numbers such that $a > 10 \geq b \geq c$ and $\frac{\log_8(a+b)}{\log_2 c} + \frac{\log_{27}(a-b)}{\log_3 c} = \frac{2}{3}$, then the greatest possible integer value of a is

24 Nov 2024, Slot 2, Q50

Type in the answer.

CAT 2024 Slot 3 - Questions 6-7

6. The sum of all distinct real values of x that satisfy the equation $10^x + \frac{4}{10^x} = \frac{81}{2}$, is

24 Nov 2024, Slot 3, Q56

(A) $2\log_{10} 2$

(B) $4\log_{10} 2$

(C) $\log_{10} 2$

(D) $3\log_{10} 2$

7. If $3^a = 4$, $4^b = 5$, $5^c = 6$, $6^d = 7$, $7^e = 8$ and $8^f = 9$, then the value of the product $abcdef$ is

24 Nov 2024, Slot 3, Q58

Type in the answer.

CAT 2023 Slot 1 - Questions 8-8

8. If x and y are positive real numbers such that $\log_x(x^2 + 12) = 4$ and $3 \log_y x = 1$, then $x + y$ equals

26 Nov 2023, Slot 1, Q46

(A) 20

(B) 68

(C) 10

(D) 11

CAT 2023 Slot 2 - Questions 9-9

9. For some positive real number x , if $\log_{\sqrt{3}}(x) + \frac{\log_x(25)}{\log_x(0.008)} = \frac{16}{3}$, then the value of $\log_3(3x^2)$ is

26 Nov 2023, Slot 2, Q50

Type in the answer.

CAT 2023 Slot 3 - Questions 10-10

10. For a real number x , if $\frac{1}{2}$, $\frac{\log_3(2^x - 9)}{\log_3 4}$, and $\frac{\log_5(2^x + \frac{17}{2})}{\log_5 4}$ are in an arithmetic progression, then the common difference is

26 Nov 2023, Slot 3, Q48

(A) $\log_4 \left(\frac{3}{2} \right)$

(B) $\log_4 7$

(C) $\log_4 \left(\frac{23}{2} \right)$

(D) $\log_4 \left(\frac{7}{2} \right)$

CAT 2021 Slot 1 - Questions 11-11

11. If $5 - \log_{10} \sqrt{1+x} + 4 \log_{10} \sqrt{1-x} = \log_{10} \frac{1}{\sqrt{1-x^2}}$, then $100x$ equals

28 Nov 2021, Slot 1, Q60

Type in the answer.

CAT 2021 Slot 2 - Questions 12-12

12. If $\log_2[3 + \log_3 \{4 + \log_4(x - 1)\}] - 2 = 0$ then $4x$ equals

28 Nov 2021, Slot 2, Q54

Type in the answer.

CAT 2021 Slot 3 - Questions 13-14

13. For a real number a , if $\frac{\log_{15} a + \log_{32} a}{(\log_{15} a)(\log_{32} a)} = 4$ then a must lie in the range

28 Nov 2021, Slot 3, Q49

(A) $2 < a < 3$

(B) $3 < a < 4$

(C) $4 < a < 5$

(D) $a > 5$

14. If n is a positive integer such that $(\sqrt[7]{10})(\sqrt[7]{10})^2 \dots (\sqrt[7]{10})^n > 999$, then the smallest value of n is

28 Nov 2021, Slot 3, Q63

Type in the answer.

CAT 2020 Slot 1 - Questions 15-16

15. If Y is a negative number such that $2^{Y^2(\log_3 5)} = 5^{\log_2 3}$, then Y equals to:

29 Nov 2020, Slot 1, Q51

(A) $\log_2\left(\frac{1}{5}\right)$

(B) $\log_2\left(\frac{1}{3}\right)$

(C) $-\log_2\left(\frac{1}{5}\right)$

(D) $-\log_2\left(\frac{1}{3}\right)$

16. If $\log_4 5 = (\log_4 y)(\log_6 \sqrt{5})$, then y equals

29 Nov 2020, Slot 1, Q67

Type in the answer.

17. The value of $\log_a\left(\frac{a}{b}\right) + \log_b\left(\frac{b}{a}\right)$, for $1 < a \leq b$ cannot be equal to

29 Nov 2020, Slot 2, Q60

(A) 0

(B) -1

(C) 1

(D) -0.5

CAT 2020 Slot 3 - Questions 18-20

18. If $\log_a 30 = A$, $\log_a \left(\frac{5}{3}\right) = -B$ and $\log_2 a = \frac{1}{3}$, then $\log_3 a$ equals

29 Nov 2020, Slot 3, Q56

(A) $\frac{2}{A+B-3}$

(B) $\frac{2}{A+B} - 3$

(C) $\frac{A+B}{2} - 3$

(D) $\frac{A+B-3}{2}$

19. If a, b, c are non-zero and $14^a = 36^b = 84^c$, then $6b\left(\frac{1}{c} - \frac{1}{a}\right)$ is equal to

29 Nov 2020, Slot 3, Q62

Type in the answer.

20. $\frac{2 \times 4 \times 8 \times 16}{(\log_2 4)^2 (\log_4 8)^3 (\log_8 16)^4}$ equals

29 Nov 2020, Slot 3, Q75

Type in the answer.

CAT 2019 Slot 1 - Questions 21-22

21. If $(5.55)^x = (0.555)^y = 1000$, then the value of $\frac{1}{x} - \frac{1}{y}$ is

24 Nov 2019, Slot 1, Q70

(A) $\frac{1}{3}$

(B) 3

(C) 1

(D) $\frac{2}{3}$

22. Let x and y be positive real numbers such that $\log_5 (x + y) + \log_5 (x - y) = 3$, and $\log_2 y - \log_2 x = 1 - \log_2 3$. Then xy equals

24 Nov 2019, Slot 1, Q95

(A) 150

(B) 25

(C) 100

(D) 250

23. If x is a real number, then $\sqrt{\log_e \frac{4x - x^2}{3}}$ is a real number if and only if

24 Nov 2019, Slot 2, Q78

(A) $1 \leq x \leq 3$

(B) $1 \leq x \leq 2$

(C) $-1 \leq x \leq 3$

(D) $-3 \leq x \leq 3$

CAT 2018 Slot 1 - Questions 24-26

24. If x is a positive quantity such that $2^x = 3^{\log_5 2}$, then x is equal to

25 Nov 2018, Slot 1, Q67

- (A) $\log_5 8$ (B) $1 + \log_3 \left(\frac{5}{3}\right)$
(C) $\log_5 9$ (D) $1 + \log_5 \left(\frac{3}{5}\right)$
-

25. If $\log_{12} 81 = p$, then $3\left(\frac{4-p}{4+p}\right)$ is equal to

25 Nov 2018, Slot 1, Q78

- (A) $\log_4 16$ (B) $\log_6 16$
(C) $\log_2 8$ (D) $\log_6 8$
-

26. If $\log_2(5 + \log_3 a) = 3$ and $\log_5(4a + 12 + \log_2 b) = 3$, then $a + b$ is equal to

25 Nov 2018, Slot 1, Q97

- (A) 59 (B) 40
(C) 32 (D) 67
-

CAT 2018 Slot 2 - Questions 27-29

27. The smallest integer n for which $4^n > 17^{19}$ holds, is closest to

25 Nov 2018, Slot 2, Q90

- (A) 37 (B) 35
(C) 33 (D) 39
-

28. $\frac{1}{\log_2 100} - \frac{1}{\log_4 100} + \frac{1}{\log_5 100} - \frac{1}{\log_{10} 100} + \frac{1}{\log_{20} 100} - \frac{1}{\log_{25} 100} + \frac{1}{\log_{50} 100} = ?$

25 Nov 2018, Slot 2, Q93

- (A) $\frac{1}{2}$ (B) 10
(C) 0 (D) -4
-

29. If $p^3 = q^4 = r^5 = s^6$, then the value of $\log_s(pqr)$ is equal to

25 Nov 2018, Slot 2, Q94

- (A) $\frac{47}{10}$ (B) $\frac{24}{5}$
(C) $\frac{16}{5}$ (D) 1
-

CAT 2017 Slot 1 - Questions 30-31

30. Suppose, $\log_3 x = \log_{12} y = a$, where x, y are positive numbers. If G is the geometric mean of x and y , and $\log_6 G$ is equal to

26 Nov 2017, Slot 1, Q87

- | | |
|----------------|----------|
| (A) $\sqrt{a}$ | (B) $2a$ |
| (C) $a/2$ | (D) a |
-

31. The value of $\log_{0.008} \sqrt{5} + \log_{\sqrt{3}} 81 - 7$ is equal to

26 Nov 2017, Slot 1, Q89

- | | |
|-----------|-----------|
| (A) $1/3$ | (B) $2/3$ |
| (C) $5/6$ | (D) $7/6$ |
-

CAT 2017 Slot 2 - Questions 32-33

32. If x is a real number such that $\log_3 5 = \log_5(2 + x)$, then which of the following is true?

26 Nov 2017, Slot 2, Q88

(A) $0 < x < 3$

(B) $23 < x < 30$

(C) $x > 30$

(D) $3 < x < 23$

33. If $\log(2^a \times 3^b \times 5^c)$ is the arithmetic mean of $\log(2^2 \times 3^3 \times 5)$, $\log(2^6 \times 3 \times 5^7)$, and $\log(2 \times 3^2 \times 5^4)$, then a equals

26 Nov 2017, Slot 2, Q92

Type in the answer.

34. If $\log_y x = (a * \log_z y) = (b * \log_x z) = ab$, then which of the following pairs of values for (a, b) is not possible?

19 Nov 2006, Q70

(A) (-2, 1/2)

(B) (1,1)

(C) (0.4, 2.5)

(D) (π , $1/\pi$)

(E) (2,2)

CAT 2005 - Questions 35-35

35. If $x \geq y$ and $y > 1$, then the value of the expression $\log_x(x/y) + \log_y(y/x)$ can never be

20 Nov 2005, Q18

- (A) -1 (B) -0.5
(C) 0 (D) 1
-

36. Let $u = (\log_2 x)^2 - 6\log_2 x + 12$ where x is a real number. Then the equation $x^u = 256$, has

21 Nov 2004, Q62

- (A) no solution for x (B) exactly one solution for x
(C) exactly two distinct solutions for x (D) exactly three distinct solutions for x
-

CAT 2003 Re-test (15 Feb 2004) - Questions 37-39

37. If $\log_{10} x - \log_{10} \sqrt{x} = 2 \log_x 10$, then the possible value of x is given by

15 Feb 2004, CAT 2003 Re-test, Q65

- (A) 10
(B) $\frac{1}{100}$
(C) $\frac{1}{1000}$
(D) None of these

38. If $\frac{1}{3} \log_3 M + 3 \log_3 N = 1 + \log_{0.008} 5$, then

15 Feb 2004, CAT 2003 Re-test, Q70

- (A) $M^9 = \frac{9}{N}$
(B) $N^9 = \frac{9}{M}$
(C) $M^3 = \frac{3}{N}$
(D) $N^9 = \frac{3}{M}$

39. What is the sum of 'n' terms in the series $\log m + \log \left(\frac{m^2}{n} \right) + \log \left(\frac{m^3}{n^2} \right) + \log \left(\frac{m^4}{n^3} \right) + \dots$?

15 Feb 2004, CAT 2003 Re-test, Q75

- (A) $\log \left[\frac{n^{(n-1)}}{m^{(n+1)}} \right]^{\frac{n}{2}}$
(B) $\log \left[\frac{m^m}{n^n} \right]^{\frac{n}{2}}$
(C) $\log \left[\frac{m^{(1-n)}}{n^{(1-m)}} \right]^{\frac{n}{2}}$
(D) $\log \left[\frac{m^{(n+1)}}{n^{(n-1)}} \right]^{\frac{n}{2}}$

40. If $\log_3 2, \log_3(2^x - 5), \log_3(2^x - 7/2)$ are in arithmetic progression, then the value of x is equal to

23 Nov 2003, CAT 2003 Original sitting, Q140

(A) 5

(B) 4

(C) 2

(D) 3

CAT 1997 - Questions 41-41

41. If $\log_2 \log_7 (x^2 - x + 37) = 1$, then what could be the value of 'x'?

CAT 1997, Q109

- (A) 3 (B) 5
(C) 4 (D) None of these
-

CAT 1994 - Questions 42-43

42. If $\log_7 \log_5 (\sqrt{x+5} + \sqrt{x}) = 0$, find the value of x.

CAT 1994, Q55

- (A) 1
(B) 0
(C) 2
(D) None of these
-

43. $\log_6 (216\sqrt{6})$ is

CAT 1994, Q77

- (A) 3
(B) 3/2
(C) 7/2
(D) None of these
-

- End of PYQ Collection -
