



SSC



SELECTION POST | CGL

ALGEBRA

MATHEMATICS

2024-25 का निचोड़

Daily Live
3:00 pm

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ALGEBRA PART-01

$$x = \sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}$$

$$= \sqrt{\frac{(2+\sqrt{3})^2}{2^2 - (\sqrt{3})^2}} = 2 + \sqrt{3}$$

$$x^2 = (2 + \sqrt{3})^2 = 4 + 3 + 4\sqrt{3}$$

$$= 7 + 4\sqrt{3}$$

1. If $x = \sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$ then determine the value of $x^2 + x - 9$

$x = \sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$ फिर का मान निर्धारित करें $x^2 + x - 9$

$$x = 2 + \sqrt{3}$$

$$1. 5\sqrt{3}$$

$$2. 3\sqrt{3}$$

$$3. 0$$

$$4. 4\sqrt{3}$$

$$\text{Sol}^n \Rightarrow 7 + 4\sqrt{3} + 2 + \sqrt{3} - 9$$

$$= 5\sqrt{3}$$

$$x = \sqrt{5} + 2 \quad x^2 - 4\sqrt{5}$$

$$x^2 = 9 + 4\sqrt{5}$$

$$\text{Sol} \Rightarrow x^2 - 4\sqrt{5} = 9 + 4\sqrt{5} - 4\sqrt{5} \\ = \textcircled{9}$$

2. If $x = \sqrt{5} + 2$ find $x^2 - 4\sqrt{5}$

यदि $x = \sqrt{5} + 2$ तो $x^2 - 4\sqrt{5}$ ज्ञात कीजिए

1. 1

2. 7

✓ 3. 9

4. 3

(SSC-CGL 2025)

3. Given, $a = \sqrt{5}$, what is $(a + 1)^2 + (a - 1)^2$?

यदि $a = \sqrt{5}$ है, तो $(a + 1)^2 + (a - 1)^2$ का मान क्या होगा?

1. 13 ~~x~~

✓ 2. 12

3. 14

4. 15 ~~x~~

$$a = \sqrt{5}$$

$$\begin{aligned} (a+1)^2 + (a-1)^2 &= 2[a^2 + 1] \\ &= 2[(\sqrt{5})^2 + 1] \\ &= 2[6] = \boxed{12} \end{aligned}$$

$$* (a+b)^2 + (a-b)^2 = 2(a^2 + b^2)$$

$$* (a+b)^2 - (a-b)^2 = 4ab$$

$$\frac{(4p)^3 + (4q)^3}{p^3 + q^3} = \frac{64p^3 + 64q^3}{p^3 + q^3}$$

$$= \frac{64(p^3 + q^3)}{p^3 + q^3}$$

$$= 64$$

4. If $p = 0.8$ and $q = 0.02$ find the value of $\frac{(4p)^3 + (4q)^3}{p^3 + q^3}$

यदि $p = 0.8$ और $q = 0.02$ है, तो $\frac{(4p)^3 + (4q)^3}{p^3 + q^3}$ का मान ज्ञात कीजिए।

1. 56

2. 31

3. 59

✓ 4. 64

5. Find the value of x in the given equation:

$$\frac{\sqrt{7+x} + \sqrt{7-x}}{\sqrt{7+x} - \sqrt{7-x}} = 4$$

दिए गए समीकरण में x का मान ज्ञात कीजिए::

$$\frac{\sqrt{7+x} + \sqrt{7-x}}{\sqrt{7+x} - \sqrt{7-x}} = 4$$

1. 56/17
2. 46/27
3. 46 17
4. 56/27

SSC CGL Tier-1 20 SEP 2025(Shift-3)

$$x = \sqrt{2} + 1 \quad x^2 - 2$$

$$x^2 = 3 + 2\sqrt{2}$$

$$\begin{aligned} \text{Sol} \Rightarrow x^2 - 2 &= 3 + 2\sqrt{2} - 2 \\ &= 1 + 2\sqrt{2} \end{aligned}$$

6. If $x = \sqrt{2} + 1$ find $x^2 - 2$

यदि $x = \sqrt{2} + 1$ तो ज्ञात कीजिए $x^2 - 2$

✓ 1. $1 + 2\sqrt{2}$

2. $3 + 2\sqrt{2}$

3. $2 + \sqrt{2}$

4. $1 + \sqrt{2}$

SSC CGL Tier-1 21 SEP 2025(Shift-1)

$$x + \frac{1}{x} = -2 \Rightarrow x = -1$$

$x^{\text{even}} = 1$
 $x^{\text{odd}} = -1$

7. Given: $x + \frac{1}{x} = -2$ then determine the value of $x^6 + \frac{1}{x^6} - 3\left(x^4 + \frac{1}{x^4}\right) + 4\left(x^2 + \frac{1}{x^2}\right)$.

दिया गया है: $x + \frac{1}{x} = -2$ तो का मान निर्धारित $\left(x^6 + \frac{1}{x^6}\right) - 3\left(x^4 + \frac{1}{x^4}\right) + 4\left(x^2 + \frac{1}{x^2}\right)$.

$$1.5 \quad 2 - 3(2) + 4 \times 2$$

$$2.8$$

$$3.3$$

$$4.4$$

$$2 - 6 + 8 = 4$$

SSC CGL Tier-1 20 SEP 2025(Shift-1)

8. Given, $x + \frac{1}{x} = 5$, then determine the value of $x^2 + \frac{1}{x^2}$

$x + \frac{1}{x} = K \rightarrow x^2 + \frac{1}{x^2} = K^2 - 2$
 $\rightarrow x^3 + \frac{1}{x^3} = K^3 - 3K$

$x + \frac{1}{x} = 5$, तो का मूल्य क्या है $x^2 + \frac{1}{x^2} = 5^2 - 2 = 23$

1. 25

2. 24

3. 26

✓ 4. 23

SSC CGL Tier-1 13 SEP 2025(Shift-2)

$$x + \frac{1}{x} = 4 \quad x^3 + \frac{1}{x^3} = 4^3 - 3 \times 4$$

$$= 64 - 12$$

$$= 52$$

9. Given, $x + \frac{1}{x} = 4$, find the value of $x^3 + \frac{1}{x^3}$

दिया गया है, $x + \frac{1}{x} = 4$, $x^3 + \frac{1}{x^3}$ का मान ज्ञात कीजिए

1. 55

2. 57

✓ 3. 52

4. 50

SSC CGL Tier-1 14 SEP 2025(Shift-1)

$$x + \frac{1}{x} = 4 \quad x^3 + \frac{1}{x^3} = 4^3 - 3 \times 4 = 52$$

$$x^6 + \frac{1}{x^6} = 52^2 - 2 = 2704 - 2 = 2702$$

$$x^4 + \frac{1}{x^4} = (4^2 - 2)^2 - 2 = 14^2 - 2 = 194$$

10. Given, $x + \frac{1}{x} = 4$, Find the value of:

$$x^6 + \frac{1}{x^6} - 3 \left(x^4 + \frac{1}{x^4} \right) + 4 \left(x^2 + \frac{1}{x^2} \right)$$

दिया गया है, $x + \frac{1}{x} = 4$ तो $x^6 + \frac{1}{x^6} - 3 \left(x^4 + \frac{1}{x^4} \right) + 4 \left(x^2 + \frac{1}{x^2} \right)$ का मान ज्ञात कीजिए: ↓

✓ 1. 2176

2. 2087 ✗

3. 2562 ✗

4. 2476 ✗

$$2702 - 3 \times 194 + 4 \times 14 = 2702 - 582 + 56 = 2176$$

SSC CGL Tier-1 18 SEP 2025(Shift-2)

$$x + \frac{1}{x} = -1$$

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

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

11. If $x + \frac{1}{x} = -1$ then compute: $x^4 + \frac{1}{x^4} + 2x^2 + \frac{2}{x^2}$

यदि $x + \frac{1}{x} = -1$ तो : ज्ञात कीजिए। $x^4 + \frac{1}{x^4} + 2x^2 + \frac{2}{x^2}$

का मान

✓ 1. -3

2. 3

4. -4

$$= x^4 + \frac{1}{x^4} + 2(x^2 + \frac{1}{x^2})$$

$$= -1 + 2(-1)$$

SSC CGL Tier-1 19 SEP 2025(Shift-1)

$$= -1 - 2 = \boxed{-3}$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = 4$$

$$x + \frac{1}{x} = ?$$

$$= 4^2 - 2$$

$$= 14$$

12. Given, $\sqrt{x} + \frac{1}{\sqrt{x}} = 4$ then what is $x + \frac{1}{x}$?

दिया गया है, $\sqrt{x} + \frac{1}{\sqrt{x}} = 4$ तो क्या है $x + \frac{1}{x}$

1. 15

☒ 2. 14

3. 16

4. 17

SSC CGL Tier-1 18 SEP 2025(Shift-2)

$$x + \frac{2}{x} = 7$$

$$x^3 + \frac{8}{x^3} = 7^3 - 3 \times 7 \times 2$$

$$= 343 - 42 = 301$$

13. if $(x + \frac{2}{x} = 7)$ find the value of $x^3 + \frac{8}{x^3}$

यदि $(x + \frac{2}{x} = 7)$ तो $x^3 + \frac{8}{x^3}$ का मान ज्ञात कीजिए।

1. 256

✓ 2. 301

3. 352

4. 298

SSC CGL Tier-1 18 SEP 2025(Shift-3)

$$x + \frac{1}{x} = 5 \quad \frac{2x}{x^2-1}$$

14. Given, $x + \frac{1}{x} = 5$ then determine the value of $\frac{2x}{x^2-1}$

दिया गया है ज्ञात कीजिए $\frac{2x}{x^2-1}$ तो का मान $x + \frac{1}{x} = 5$

$$\text{Sol} \Rightarrow \frac{2 \times x}{x(x - \frac{1}{x})} = \frac{2}{(x - \frac{1}{x})}$$

$$= \frac{2}{\sqrt{21}} \times \frac{\sqrt{21}}{\sqrt{21}} = \frac{2\sqrt{21}}{21}$$

1. $\frac{2\sqrt{21}}{21}$
2. $\frac{2\sqrt{21}}{25}$
3. $\frac{7\sqrt{21}}{25}$
4. $\frac{9\sqrt{21}}{2}$

$$\sqrt{(x + \frac{1}{x})^2 - 4} = x - \frac{1}{x}$$

$$\sqrt{25-4} = x - \frac{1}{x} = \sqrt{21}$$

SSC CGL Tier-1 23 SEP 2025(Shift-3)

$$x = \frac{a}{b} + \sqrt{\frac{c}{d}}$$

$a^2 - b^2 = 1$

$$x = a + \sqrt{b}$$

$$x + \frac{1}{x} = 2a$$

$$x - \frac{1}{x} = 2b$$

$$x - \frac{1}{x} = 2\sqrt{3}$$

$$x = 2 + \sqrt{3}$$

$$\frac{1}{x} = 2 - \sqrt{3}$$

$$x + \frac{1}{x} = 4$$

$$x - \frac{1}{x} = 2\sqrt{3}$$

15. If $x = 2 + \sqrt{3}$ find $x - \frac{1}{x}$

यदि $x = 2 + \sqrt{3}$ तो $x - \frac{1}{x}$ ज्ञात कीजिए

1. $\sqrt{3}$

2. $2\sqrt{3}$

3. $3\sqrt{2}$

4. $5\sqrt{3}$

SSC CGL Tier-1 20 SEP 2025(Shift-1)

$$\begin{aligned}
 a+b &= 5 & ab &= 6 \\
 3+2 & & 3 \times 2 &= 6 \\
 (a^3+b^3)^2 - 9a^2b^2(a+b)^2 &= \\
 \downarrow \\
 (27+8)^2 - 9 \times 9 \times 4 (5)^2 &= \\
 35^2 - 81 \times 4 \times 25 &= \\
 1225 - 8100 &= -6875
 \end{aligned}$$

16. If $a + b = 5$ and $ab = 6$ Find: $(a^3 + b^3)^2 - 9a^2b^2(a+b)^2$

यदि $a + b = 5$ और $ab = 6$ तो ज्ञात कीजिए:

$$(a^3 + b^3)^2 - 9a^2b^2(a+b)^2$$

- ✓ 1. - 6875
- 2. 6875
- 3. - 3876
- 4. 3876

SSC CGL Tier-1 15 SEP 2025(Shift-3)

17. Given, $\sqrt{x+3} + \sqrt{x-2} = 5$, then find the value of x .

दिया गया है, $\sqrt{x+3} + \sqrt{x-2} = 5$ तो x मान ज्ञात कीजिए।

1. 5 ✗

✓ 2. 6

3. 1

4. 8

$$\sqrt{9} + \sqrt{4} = 3 + 2 = 5$$

SSC CGL Tier-1 18 SEP 2025(Shift-1)

18. If $a^3 + b^3 = 35$ and $ab = 6$, find the value of $a + b$.

यदि $a^3 + b^3 = 35$ और $ab = 6$ है, तो $a + b$ का मान ज्ञात कीजिए

1. 5
2. 6
3. 7
4. 8

$$1 \times 6 = 6 \quad 3 + 2 = 5$$

$$27 + 8 = 35 \quad 3 \times 2$$

SSC CGL Tier-1 19 SEP 2025(Shift-2)

$$a^3 + b^3 = 280, a + b = 10$$

$$216 + 64 = 280 \quad (8) \quad (2) \quad (ab)$$

$$6 + 4 = 10$$

19. If $a^3 + b^3 = 280$ and $a + b = 10$ find ab .

यदि $a^3 + b^3 = 280$ और $a + b = 10$ हो, तो ज्ञात कीजिए।

✓ 1. 24

2. 26

3. 28

4. 22

SSC CGL Tier-1 23 SEP 2025(Shift-3)

$$96. a + b + c = 0$$

$$a^3 + b^3 + c^3 = 3abc$$

$$a^3 + b^3 + c^3 - 3abc = 0$$

$$(a^3 + b^3 + c^3) \div 3abc$$

$$\frac{3abc}{3abc} = 1$$

20. If $a + b + c = 0$ and $a = 0.1$, $b = 0.2$, $c = -0.3$ then what is $(a^3 + b^3 + c^3) \div (3abc)$

यदि $a + b + c = 0$ और $a = 0.1$, $b = 0.2$, $c = -0.3$ तो $(a^3 + b^3 + c^3) \div (3abc)$

1. -3

2. 0

✓ 3. 1

4. -2

SSC CGL Tier-1 19 SEP 2025(Shift-2)

21. If $a = 0.02b = 0.03c = -0.05$ and $a + b + c = 0$ find $(a^3 + b^3 + c^3) \div (3abc)$

यदि $a = 0.02$ $b = 0.03$ $c = -0.05$, तथा $a+b+c = 0$ तो $(a^3 + b^3 + c^3) \div (3abc)$ ज्ञात कीजिए।

1. -1

2. 0

3. 1

4. 2

$$\frac{3abc}{3abc} = 1$$

SSC CGL Tier-1 15 SEP 2025(Shift-3)

$$a + b + c = x - y + y - z + z - x = 0$$

$$3abc = 3(x - y)(y - z)(z - x)$$

22. Given $x + y + z = 0$ and $x^3 + y^3 + z^3 = 3xyz$, evaluate

$$(x - y)^3 + (y - z)^3 + (z - x)^3$$

दिया गया $x + y + z = 0$ और $x^3 + y^3 + z^3 = 3xyz$, $(x - y)^3 + (y - z)^3 + (z - x)^3$ का मूल्यांकन करें

1. 0

2. $9(x - y)(y - z)(z - x)$

3. $27xyz$

✓ 4. $3(x - y)(y - z)(z - x)$

SSC CGL Tier-1 17 SEP 2025(Shift-3)

$$(19)^3 + (20)^3 + (-39)^3 + 118$$

$$3 \times 19 \times 20 - 39 + 118$$

$$380 \times 3 - 13 \times 3$$

$$1140 \times 3 - 13$$

$$3420 \times -13$$

$$-44460 + 118$$

$$= -44342$$

23. $19^3 + 20^3 - 39^3 + 118$ is equal to:

$19^3 + 20^3 - 39^3 + 118$ बराबर है:

1. -44342

2. -6789

3. 0

4. 1

SSC CGL Tier-1 17 SEP 2025(Shift-3)

$$19 + 20 - 39 = 0$$

$$1 + 4\sqrt{3} = x + 4\sqrt{3}$$

24. What will come in place of ? to satisfy the equation: $(\sqrt{3} + 2)^2 = ? + 4\sqrt{3}$

समीकरण को संतुष्ट करने के लिए? के स्थान पर क्या

आएगा: $(\sqrt{3} + 2)^2 = ? + 4\sqrt{3}$

1. 7

2. 6

3. 5

4. 4

SSC CGL Tier-1 18 SEP 2025(Shift-1)

$$(a+b)^2 - (a-b)^2 = 4ab$$

25. Evaluate : $(\sqrt{11} + \sqrt{7})^2 - (\sqrt{11} - \sqrt{7})^2$

मूल्यांकन कीजिए : $(\sqrt{11} + \sqrt{7})^2 - (\sqrt{11} - \sqrt{7})^2$

✓ 1. $4\sqrt{77}$

2. $2\sqrt{77}$

3. $6\sqrt{77}$

4. $8\sqrt{77}$

$$= 4 \times \sqrt{11} \times \sqrt{7}$$

$$= 4\sqrt{77}$$

SSC CGL Tier-1 19 SEP 2025(Shift-2)

26. If $x = \sqrt{5} + 2$, find the value of $x^2 - 4\sqrt{5}$

यदि $x = \sqrt{5} + 2$ तो $x^2 - 4\sqrt{5}$ का मान ज्ञात कीजिए

1. 5

2. 9

3. 8

4. 7

$$x^2 = 9 + 4\sqrt{5}$$

$$x^2 - 4\sqrt{5}$$

$$9 + 4\sqrt{5} - 4\sqrt{5} = 9$$

SSC CGL Tier-1

$$Q^3 - 4Q^2 + 5Q - 2$$

x, y, z

$$\text{Sum of roots} = -\frac{b}{a} = \frac{4}{1} = 4$$

27. If the cubic equation $a^3 - 4a^2 + 5a - 2$ has the root x, y, z then find the value of $x + y + z$.

यदि घन समीकरण $a^3 - 4a^2 + 5a - 2$ का मूल x, y, z है तो $x + y + z$ का मान ज्ञात कीजिए।

1. 5

2. 6

3. 7

4. 4

SSC CGL Tier-1 18 SEP 2025(Shift-1)

$$a = 7 + 4\sqrt{3} \quad a^3 + \frac{1}{a^3} =$$

$$a + \frac{1}{a} = 2 \times 7 = 14$$

$$\begin{aligned} a^3 + \frac{1}{a^3} &= 14^3 - 3 \times 14 \\ &= 2744 - 42 \\ &= 2702 \end{aligned}$$

28. If $a = 7 + 4\sqrt{3}$ find the value of $(a^3 + 1/a^3)$.
यदि $a = 7 + 4\sqrt{3}$ है, तो $(a^3 + 1/a^3)$ का मान ज्ञात कीजिए।

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- ✓ A) 2702
- B). $1560\sqrt{3}$
- C). -2702
- D) - $1560\sqrt{3}$

29. If $p^2 + 3p = 3$ find the value of $(p + 4)^3 + 1/(p + 4)^3$

यदि $p^2 + 3p = 3$ है, तो $(p + 4)^3 + 1/(p + 4)^3$ का मान ज्ञात कीजिए।



RRB NTPC Graduate CBT-1, 27/03/2026(Shift-III)

- A) 55
- B) 110
- C) 52
- D) 104

30. If $x + 1/x = -3$, find the value of $x^3 + 1/x^3$
यदि $x + 1/x = -3$ है, तो $x^3 + 1/x^3$ का मान ज्ञात कीजिए

RRB-NTPC-Graduate, CBT-1, 18/03/2026, (Shift-I)

- (A) 9
- (B) -3
- (C) 0
- (D) -18

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