Algebra

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Type: Square & Cube formula

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

1. If $\frac{1}{\sqrt[3]{25}-\sqrt[3]{5}+1} = a\sqrt[3]{25} + b\sqrt[3]{5}+c$, then find out the value of a + b + c.

(A) 1

(B) 0

(C) 1/3

(D) ¼

SSC CGL 2023

2. If $8(x+y)^3-(x-y)^3 = (x+3y)(Ax^2+Bxy+Cy^2)$, then find out the value of A - B + C.

(A) 10

(B) 14

(C) 4

(D) -6

3. If $(8(x+y)^3-27\ (x-y)^3)\div(5y-x)=Ax^2+Bxy+Cy^2$, then find out the value of A + B + C.

(A) 19

(B) 16

(C) 13

(D) 26

4. If $(x + y)^3 + 8 (x - y)^3 = (3x + Ay) (3x^2 + Bxy + Cy^2)$. Find value of A + B + C

(A) 3

(B) 4

(C) 2

(D) 0

SSC CGL: 2022

5. $p + q = 6$ and $pq = 4$, find $p^3 + q^3$

(A) 81

(B) 64

(C) 144

(D) 256

SSC CGL: 2022

6. If a-b = 2

$a^3-b^3=80$

find ab

(A) 12

(B) -24

(C) 24

(D) -12

SSC CGL: 2022

7. If $16x^2 + y^2 = \frac{65}{36}$ & $xy = \frac{1}{18}$ (x, y > 0) find $64x^3 + y^3$

(A) 19/4

(B) 27/4

(C) 27/8

(D) 49/8

SSC CGL: 2021

8. $x^3-y^3 = 416$, and $x - y = 8$. Find $(x + y)^2 - xy$

(A) 52

(B) 42

(C) 38

(D) 32

SSC CGL: 2021

9. If $x^6-512y^6 = (x^2 + Ay^2)(x^4 - Bx^2y^2 + Cy^4)$, find A+B-C

(A) -80

(B) -72

(C) 72

(D) 48

SSC 2023

10. If $x + y = 19$ & $xy = 9$, then find $x\sqrt{x} + y\sqrt{y}$?

A) 80

B) 100

C) 125

D) 110

11. If $x^2 = 17x + y$, $y^2 = x + 17y$ and $x \neq y$, then find $\sqrt{x^2 + y^2 + 1}$?

A)15

B)16

C)17

D)18

12. If $x + y = 25$ and $xy = 20$, then find the value of $x^3 + y^2$.

(A) 13152

(B) 13125

(C) 14125

(D) 14152

SSC 2023

13. . If p=999, then the value of $\sqrt[3]{p(p^2+3p+3)+1}$ is

a) 1000

b) 999

c) 998

d) 1002

14. If $x + y = 1$ and $xy(xy - 2) = 16$, then the value of $x^4 + y^4 = ?$

(a) 23

(b) 27

(c) 39

(d) 33

15. If x = 4.5 and y=1.5 find

$$\frac{x^4 - y^4}{(x+y)^3 - 3xy(x+y)} \times \frac{x}{(x-y)^2 + 2xy} \div \frac{(x+y)^2 - 4xy}{(x+y)^2 - 3xy}$$

(a) 2.5

(b) 6

(c) 3

(d) 1.5

ICAR Technician 2023

16. If $x = 2 + \sqrt{3}$, then find the value of $x^4 - 8x^3 + 16x^2$.

(a) - 1

(b) 1

(c) 0

(d) 2

17. If $x(x - 4) = 2$, then $x^6 - 88x^3 - 13 = ?$

(a) - 6

(b) - 4

(c)-5

18. If $8a^3+27b^3=16$ & $2a+3b = 4$, then find the value of $16a^4 + 81b^4$?

A) 26

B) 30

C) 28

D) 32

19. If $5x + 9y = 5$ and $125x^3 + 729y^3 = 120$ then the value of the product of x and y?

A) 1/9

B) 1/135

C) 1/45

D) 1/75

20. If $(4x-7y) = 11$ and $xy = 8$, what is the value of $16x^2 + 49y^2$, given that x and y are positive numbers?

(a)596

(b)484

(c)569

(d)448

(SSC CGL 2022)

21. If $49a^2+25b^2 = 30$ and $ab = 1$, $a, b > 0$, then the value of $(7a + 5b)$ is:

(a) 14

(b) 8

(c) 12

(d) 10

22. If $x = 1-y$ & $x^2 = 2-y^2$, then $x + y$ =?

a) 7/2

b) 97/8

c) 87/8

d) 15/8

Type 2- Symbol change

1. If $x+1=x^2$ and $x>0$, then $2x^4$ is

(a) $6+4\sqrt{5}$

(b) $3+5\sqrt{5}$

(c) $5+3\sqrt{5}$

(d) $7+3\sqrt{5}$

2. If $x + \frac{1}{x+7} = 0$, find $x - \frac{1}{x+7}$

a) $3\sqrt{5} - 5$

b) $3\sqrt{5} + 5$

c) $3\sqrt{7} - 5$

d) $3\sqrt{7} + 5$

SSC mains 2017

3. If $2x^2 - 4\sqrt{10}x + 7 = 0$ find $\frac{2x}{7} - \frac{1}{x}$

a) $\sqrt{104}/7$

b) $\sqrt{128}/7$

c) $\sqrt{52}/7$

d) $\sqrt{102}/7$

4. If $3x - \frac{1}{4x} = 3$, find $4x + \frac{1}{3x}$

a) ± 8

b) ± 3

c) ± 5

d)None

5. If $x + \frac{1}{x} = 7$ & $y - \frac{1}{y} = 4$, find $xy + \frac{1}{xy}$

a) $13\sqrt{5}$

b) $12\sqrt{5}$

c) $7\sqrt{5}$

d) None

CDS 2022

6. If $\frac{x+y}{\sqrt{xy}} = 10\sqrt{2}$, find $\frac{x-y}{\sqrt{xy}}$

a)12

b)14

c)13

d)10

7. If $5x - \frac{1}{4x} = 6, x > 0$, find $25x^2 - \frac{1}{16x^2}$

a) $6\sqrt{14}$

b) 36

c) $\sqrt{246}$

d) $6\sqrt{31}$

SSC CGL 21/4/2022

8. If $x + \frac{1}{x} = \frac{17}{4}$, find $x - \frac{1}{x}$

a)9/7

b)3/2

c)8/3

d)15/4

SSC CGL 2023

9. If $3P-5m=10$ and $pm=6$, find $9p^2-25m^2$

a) $\pm 10\sqrt{460}$

b) $\pm 10\sqrt{360}$

c) $\pm 7\sqrt{460}$

d) None

SSC CGL 03/12/2022

10. If $x + \frac{1}{x} = -14, x < -1$, find $x^2 - \frac{1}{x^2}$

a) $-112\sqrt{3}$

b) $112\sqrt{3}$

c) $\pm 112\sqrt{3}$

d) $140\sqrt{2}$

SSC CGL 2023

11. If $x^{2007} - \frac{1}{x^{2007}} = 13$,

find $x^{2007} + \frac{1}{x^{2007}}$

a) $\pm\sqrt{173}$

b) $\pm\sqrt{171}$

c) $\pm\sqrt{170}$

d) $\pm\sqrt{179}$

12. If $x^5 + \frac{1}{x^5} = 3$ find x^5

a) $\frac{3 \pm \sqrt{5}}{2}$

b) $\frac{2 \pm \sqrt{5}}{2}$

c) $\frac{5 \pm \sqrt{2}}{2}$

d) None

13. If $3x - \frac{2}{x} = 5$, find $3x + \frac{2}{x}$

a) ± 8

b) ± 7

c) ± 5

d) ± 10

14. If $5x + 3y = 15$ and $2xy = 6$, then the value of $5x - 3y$ is:

(a) $3\sqrt{3}$

(b) $3\sqrt{5}$

(c) $3\sqrt{2}$

(d) $3\sqrt{2}$

SSC CHSL 2023

Type 3- Zero से equate करना

1. If $(a - 1)^2 + (b + 2)^2 + (c - 1)^2 = 0$, the value of $a^2 + b^2 + c^2$ is:

(A) 6

(B) 2

(C) 0

(D) 1

(SSC CHSL Tier I : 2021)

2. If $a^2 + b^2 + c^2 + 96 = 8(a + b - 2c)$, then $\sqrt{ab - bc + ca}$ is equal to:

(A) $2\sqrt{2}$

(B) $2\sqrt{3}$

(C) 6

(D) 4

(SSC CGL Mains: 2018)

3. If $a^2 + b^2 + 49c^2 + 18 = 2(b - 28c - a)$ then the value of $(a + b - 7c)$ is:

(A) 1

(B) 3

(C) 4

(D) 2

(SSC CGL Tier I :2023)

4. $3x(3x-8) + y(y+1) + 4z^2 - 2z + 16\frac{1}{2} = 0.$

Find $6x + y + 2z$

(A) 8

(B) 4

(C) 2

(D) 6

5. $(a+b-3)^2 + (b + c - 2)^2 + (c + a - 5)^2=0$, then the value of $\sqrt{(b + c)^a(c + a)^b}$ is:

(A) 1

(B) 0

(C) 3

(D) 2

(SSC CHSL Tier I : 2020)

6. If $10x2 + y^2 + 6xy + 2x + 1 = 0$, then $3x + 4y = ?$

(A) 9

(B) 12

(C) 10

(D) 7

7. If $8x^2 + y^2 - 12x - 4xy + 9 = 0$, then the value of $(14x - 5y)$ is

(A) 9

(B) 6

(C) 5

(D) 3

8. If $x^2 + (x - 2y - 1)^2 = -4y(x + y)$, then what is the value of $x + 3y$.

(A) O

(B) ¼

(C) -1/4

(D) ½

SSC CGL 2023

Type-4

1. If $x+y+z = 19$, $x^2+y^2+z^2 = 133$ and $xz = y^2$, then find out the difference between z and x.

(A) 5

(B) 3

(C) 6

(D) 4

2. If $a^2+b^2+c^2 = ab+bc+ca$ find the value of $\frac{11a^4+13b^4+15c^4}{16a^2b^2+19b^2c^2+17c^2a^2}$

(a) $1\frac{3}{4}$

(b) ¼

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

(d) ¾

CHSL 2023

3. If x, y, zare real numbers. $x^3+y^3+z^3=13$, $x+y+z=1$, $xyz=1$, find $xy+yz+zx$.

(A)-1

(B)0

(C)3

(D)-3

SSC 2023

4. If $(3x - 1)^3 + (4x - 3)^3 + (2x + 1)^3 = 3(3x - 1)(4x - 3)(2x + 1)$ and $x \neq \frac{1}{3}$ find out the value of x.

(A) 1/2

(B) 2

(C) 1/4

(D) 1

5. If $x^2+y^2+z^2 = 133$, $xy+yz+zx = 114$ and $xyz = 216$, then find out the value of $x^3+y^3+z^3$.

(A) 942

(B) 1009

(C) 999

(D) 948

6. If $(5x-3)^3 + (2x + 5)^3 + 27(4 - 3x)^3 = 9(3-5x)(2x + 5)(3x-4)$. Find out 2x+1

(A) 13

(B) -13

(C) 15

(D) -15

7. If $a - \frac{1}{a} = b, b - \frac{1}{b} = c, c - \frac{1}{c} = a$ then find out the value of $\frac{1}{ab} + \frac{1}{bc} + \frac{1}{ca}$

(A) 3

(B) 0

(C) -3

(D) 1

8. If $(x + y)^{1/3} + (y + z)^{1/3} = - (z + x)^{1/3}$, then find out the value of $x^3+y^3+z^3$.

(A) $\frac{1}{8}xyz$

(B) $\frac{27}{8}(x+y)(y+z)(z+x)$

(C) $\frac{3}{8}(x+y)(y+z)(z+x\}$

(D) 3xyz

9. If $x+y+z = 11$, $x^2+y^2+z^2 = 133$ and $x^3+y^3+z^3 = 881$, then the value of $\sqrt[3]{xyz}$ is:

(A) -8

(B) 6

(C) 8

(D) -6

10. If $p^3+q^3+r^3-3pqr = 4$, $a=q+r$, $b=r+p$, $c=p+q$, then find out the value of $a^3+b^3+c^3-3abc$.

(A) 4

(B) 8

(C) 3

(D) 2

11. $\frac{(x^2-y^2)^3+(y^2-z^2)^3+(z^2-x^2)^3}{(x-y)^3+(y-z)^3+(z-x)^3}$ =?

(A) (x+y)(y+z)(z+x)

(B) 3

(C) 3xyz

(D) 3(x+y)(y+z)(z+x)

12. If $a + b + c = 6$, then $(a - 1)^3 + (b - 2)^3 + (c - 3)^3$?

(A) $3(a-1)(b-2)(c-3)$

(B) 3

(C) $(a-1)(b-2)(c-3)$

(D) 1

13. Find the value of $(a^3 + b^3 + c^3 - 3abc)$, where a = 335, b = 215 and c = 180.

(a) 14472250

(b) 15421320

(c) 14502230

(d) 15452630

CHSL 2023

14. If $a + b + c = 10$; $a^2 + b^2 + c^2 = 38$, what is the value of $(a-b)^2 + (b- c)^2 + (c-a)^2$?

(a) 15

(b) 12

(c) 14

(d) 13

CPO 2022

15. Simplify the given expression

$$\frac{x^3 + y^3 + z^3 - 3xyz}{(x-y)^2 + (y-z)^2 + (z-x)^2}$$

(a) $(x + y + z)$

(b) $\frac{1}{2}(x + y + z)$

(c) $\frac{1}{3}(x + y + z)$

(d) $\frac{1}{4}(x + y + z)$

CHSL2023

16. If $(d + e + f) = 14$, $(d^2 + e^2 + f^2) = 96$, find the value of $(de + ef + fd)$.

(a) 50

(b) 25

(c) 100

(d) 75

CHSL2023

17.If $(a^3 + b^3 + c^3 - 3ab) = 405$, and $(a - b)^2 + (b - c)^2 + (c - a)^2 = 54$, find the value of $(a + b + c)$.

(a) 15

(b) 45

(c) 9

(d) 27

SSC CGL 2023

18. If l + m + n = 0, then what will be the value of $\left(\frac{l^2}{mn}+\frac{m^2}{nl}+\frac{n^2}{lm}\right)^2$?

(a) 16

(b) 9

(c) 1

(d) 4

CHSL 2023

19. If $a = 101$, $b = 102$ and $c = 103$, then $a^2 + b^2 + c^2 - ab - bc - ca$ =?

(a) 2

(b) 4

(c) 3

(d) 6

SSC CGL 2023

20. If $(a + b + c) = 13$, and $(ab + bc + ca) = 54$, find the value of $(a^2 + b^2 + c^2)$.

(a) 36

(b) 65

(c) 61

(d) 59

SSC CGL 2023

21. If $(a + b + c) = 14$, and $(a^3 + b^3 + c^3 - 3abc) = 98$, find the value of $(a^2 + b^2 + c^2)$.

(a) 70

(b) 64

(c) 68

(d) 72

SSC CGL 2023

22. If $x = 2.35$, $y = 6.17$, $z = 8.52$, find $x^3 + y^3 - z^3 + 3xyz = ?$

(a) 0
(b) 4
(c) 6
(d) 8

23. $\frac{x^2-y^2}{(1-x^2)(y^2-1)}+\frac{(1-x^2)^2}{(x^2-y^2)(y^2-1)}+\frac{(y^2-1)^2}{(1-x^2)(x^2-y^2)}=$?

(a) 3

(b) 2

(c) 1

(d) 0

24. $\frac{(4.53-3.07)^2}{(3.07-2.15)(2.15-4.53)} + \frac{(3.07-2.15)^2}{(2.15-4.53)(4.53-3.07)} + \frac{(2.15-4.53)^2}{(4.53-3.07)(3.07-2.15)}$ **is simplified to**

(a) 0

(b) 1

(c) 2

(d) 3

Type5 – Square & Cube with different formulas

1. If $(a+\frac{1}{a}) = 6$, then what is the value of $\frac{3}{4}(a^2+\frac{1}{a^2})$?

(a) 22.5

(b) 25.5

(c) 36

(d) 34

CHSL2023

2. If $(a+\frac{1}{a}) = 5$, then what is the value of $(a^3+\frac{1}{a^3})$?

(a) 110

(b) 15

(c) 105

(d) -10

CGL 2022

3. If $(x+\frac{1}{x}) = 10$, then what is the value of $(x^4+\frac{1}{x^4})$?

(a) 9604

(b) 9602

(c) 9600

(d) 9606

CGL 2023

4. If $(x+\frac{1}{x}) = 4$, then what is the value of $(x^5+\frac{1}{x^5})$?

(a) 724
(b) 123
(c) 524
(d) None

5. If $(x+\frac{1}{x}) = 7$, then what is the value of $(x^6+\frac{1}{x^6})$?

(a) 113682

(b) 103682

(c) 103882

(d) 103862

SSC CGL 2023

6. If $(x+\frac{1}{x}) = 3$, then what is the value of $(x^7+\frac{1}{x^7})$?

(a) 749

(b) 843

(c) 746

(d) 849

Mains 03 feb 2022

7. If $(x+\frac{1}{x}) = 5$, then what is the value of $(x^8+\frac{1}{x^8})$?

(a) 277727
(b) 277729
(c) 277767
(d) 266672

8. If $(y+\frac{1}{y}) = 7$, then what is the value of $(y^6+\frac{1}{y^6})$?

(a) 5774

(b) 4096

(c) 5776

(d) 5778

SSC CGL 2023

9. If $(x+\frac{1}{x}) = 5$, & x>1, then what is the value of $(x^8-\frac{1}{x^8})$?

(a) $60605\sqrt{21}$

(b) $60615\sqrt{21}$

(c) $60705\sqrt{21}$

(d) $60725\sqrt{21}$

SSC CGL 2023

10. If $(x+\frac{1}{x}) = 2\sqrt{2}$, & x>1, then what is the value of $(x^6-\frac{1}{x^6})$?

(a) $140\sqrt{2}$

(b) $116\sqrt{2}$

(c) $144\sqrt{2}$

(d) $128\sqrt{2}$

SSC CGL 2023

11. $x^4 + \frac{1}{x^4} = 194$ **& x>0, then what is the value of** $\left(x^3 + \frac{1}{x^3} + x + \frac{1}{x}\right)$ **?**

(a) 76

(b) 66

(c) 56

(d) 46

CHSL 2023

12. If $x^2 - 5x + 1 = 0$, find $\frac{x^6+x^4+x^2+^1}{5x^3}$

(a) 30

(b) 25

(c) 23

(d) 28

SSC CGL 01/12/2022

13. If $x - \frac{1}{x} = 3$ find $\frac{2x^4+3x^3+13x^2-3x+2}{3x^4+3}$

(a) 3/4

(b) 1

(c) 5/4

(d) 4/3

SSCCGL mains 2022

14. If $x^4 - \frac{1}{x^4} = 14159$ find $x + \frac{1}{x}$

(a) 9

(b) 12

(c) 10

(d) 11

SSC CHSL 2019

15. If $x + \frac{1}{x} = 3$

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

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

(iii) $x^6 + \frac{1}{x^6}$

(iv) $x^8 + \frac{1}{x^8}$

16. If $x^{130} + \frac{1}{x^{130}} = 9$ find $x^{390} - \frac{1}{x^{390}}$

(a) $74\sqrt{77}$

(b) $80\sqrt{77}$

(c) $81\sqrt{77}$

(d) 1

17. If $a^4 + \frac{1}{a^4} = 50$, a>0, find $a^3 + \frac{1}{a^3}$

(a) $\sqrt{2(1+\sqrt{13})}(-1-2\sqrt{13})$

(b) $\sqrt{2(1-\sqrt{13})}(-1+2\sqrt{13})$

(c) $\sqrt{2(1+\sqrt{13})}\ \mathrm{x}\ (-1+2\sqrt{13})$

(d) $\sqrt{2(1+\sqrt{13})}(-1+2\sqrt{13})$

SSC Tier-II 2019

18. If $x(x - 3) = -1$, find $x^2(x^2 - 7)$.

(a)0

(b)1

(c)-1

(d)2

19. If $x(x - 3\sqrt{3}) = 1$ find $x^3 (x^3 - 90\sqrt{3})$

(a) 1

(b) 0

(c) -1

(d) 3

20. If $x^4 - 5x^2 - 1 = 0$, find $x^6 - 3x^2 + \frac{3}{x^2} - \frac{1}{x^6} + 1$

(a) 96

(b) 116

(c) 110

(d) 126

CDS 2023

21. If $x^2 + 1 = 3x$ find $\frac{x^4+x-2}{x^2+5x+1}$

(a) 5/4

(b) 9/4

(c) 4/9

(d) 1

22. If $5x^{7/4} - 3x^{7/8} + 5 = 0$, then find out the value of $x^{7/4} + x^{-7/4}$

(A) -41/25

(B) -21/25

(C) 41/25

(D) 0

23. If $x - 5\sqrt{x} - 1 = 0$, then $x^2 + \frac{1}{x^2}$ is equal to

(a)625
(b)731
(c)729
(d)727

24. If $x+\frac{1}{x}=\frac{\sqrt{3}+1}{2}$, then find out the value of $x^4+\frac{1}{x^4}=?$

(a) $\frac{4\sqrt{3}-1}{4}$

(b) $\frac{4\sqrt{3}+1}{2}$

(c) $\frac{-4\sqrt{3}-1}{4}$

(d) $\frac{-4\sqrt{3}-1}{2}$

25. If $\sqrt{x}+\frac{1}{\sqrt{x}}=\sqrt{15}$, then find out the value of $x\sqrt{x}+\frac{1}{x\sqrt{x}}$?

(a) $12\sqrt{15}$
(b) $13\sqrt{15}$
(c) $10\sqrt{15}$
(d) $14\sqrt{15}$

26. If $x^{\frac{3}{4}} + \frac{1}{x^{\frac{3}{4}}+9} = 0$, then find out the value of $(x^{\frac{3}{4}} + 9)^2 - \frac{1}{(x^{\frac{3}{4}}+9)^2}$

(a) $\sqrt{76}$

(b) $\sqrt{70}$

(c) $\sqrt{79}$

(d) $9\sqrt{77}$

27. If $x + \frac{1}{9x} = 3$, then find the value of $27x^3 + \frac{1}{27x^3}$ is

(a) 488
(b) 702
(c) 970
(d) None

28. If $x + \frac{1}{x+2} = 6$, $(x+2)^3 + \frac{1}{(x+2)^3} = ?$

(a)400

(b)488

(c)702

(d)198

29. If $4x - \frac{1}{5x} = 6, 1000x + \frac{1}{8x^3} = ?$

(a)3500

(b)3200

(c)3600

(d)3000

30. If $x + \frac{1}{16x} = 3, 16x^3 + \frac{1}{256x^3} = ?$

(a)422

(b)433

(c)423

(d)440

31. If $6x + \frac{4}{9x} = 1$, then $729x^3 - \frac{8}{27x^3}$

(a)99/8

(b)195/8

(c)41/4

(d)243/8

32. If $a + a^2 + a^3 = 1$, then find $a^3 + \frac{1}{\alpha}$ is

(A) 1

(B) 2

(C) 3

(D) 4

33. If $a^3 + 3a^2 + 9a = 1$, then find $a^3+\frac{3}{a}$ is

(A) 28

(B) 30

(C) 27

(D) 0

34. If $a + a^2 + a^3 + a^4 - 2 = 20$, then find $a^4 + \frac{2}{a}$ is

(A) 1

(B) 2

(C) 4

(D) 3

35. If $a^4 + a^3 + a^2 + a + 1 = 0$, then what is the value of $a^{15} + a^{10} - 2$.

(A) 0

(B) 1

(C) 2

(D) 3

36. If $a^5 + a^4 + a^3 + a^2 + a + 1 = 0$, then find the value of $a^{36} + a^{18} + 1$

(A) 0

(B) 2

(C) 5

(D) 3

37. If $x^2 - 12x + 33 = 0$, then find out the value $(x - 4)^4 + \frac{1}{(x-4)^4}$

(A) 227

(B) 326

(C) 167

(D) 194

38. If $x^2 + x = 5, (x+3)^3 + \frac{1}{(x+3)^3} = ?$

(A) 110

(B) 125

(C) 140

(D) 0

39. $\sqrt{x} + \frac{1}{\sqrt{x}} = 3, x > 0$ **find** $x^2(x^2-47)$

(a)0

(b)2

(c)-2

(d)-1

CPO 2019

40. If $x^3 - 6x^2 + 35 = 8(x-2)$, find

$$x^2 + \frac{3}{x-6}$$

(a)2

(b)4

(c)6

(d)8

41. If $x^2 - 38x + 96 = 0$, find $(x-5) - \frac{69}{x-5}$

(a) 27

(b) 28

(c) 29

(d) 30

42. If $x^8 - 32x^4 + 256 = 0$, then positive value of $\left(x^2 + \frac{1}{x^2}\right)$ is:

(a)3.75

(b)5.75

(c)2.25

(d)4.25

43. If $a - \frac{24}{a} = 5$, (a>0), find $a^2 + \frac{64}{a^2}$?

(a)45

(b)56

(c)60

(d)65

44. If $x^8 - 1442x^4 + 1 = 0$, then the possible value of $x - \frac{1}{x}$ is?

(a) 5
(b) 8
(c) 4
(d) 6

45. If $8k^6 - 31k^3 - 4 = 0$ Find negative value of $K + \frac{1}{K}$

46. If (x-a)(x-b)=1 & a-b+3=0 find

$$(x-a)^3-\frac{1}{(x-a)^3}$$

(a)18

(b)36

(c)27

(d)None

47. If (x+2)(x-1)=1, find $(x+2)^3 - \frac{1}{(x+2)^3}$

(a) 18

(b) 26

(c) 25

(d) 36

Type-6

1. If $x + \frac{1}{x} = 1$, then find out the value of given function.

$$(a) x^{18} + \frac{1}{x^{18}}$$

$$(b) x^{17} + \frac{1}{x^{17}}$$

$$(c) x^{14} + \frac{1}{x^{14}}$$

2. $x+\frac{1}{x}=\sqrt{3}$, **then find**

$x^{48}+x^{42}+x^{36}+x^{30}+x^{27}+x^{21}+x^{18}+x^{12}+x^{6}+5.$

(a)2

(b)3

(c)5

(d)4

3. If $\sqrt{x} - \frac{1}{\sqrt{x}} = x\sqrt{x}$, find $x^{12} + \frac{1}{x^{12}}$

(a)1

(b)2

(c)-1

(d)None

4. If $x^2 + x = -1$, find $(1+x^{16}\ x^{17})(1-x^{16}+x^{17})$

(a)4

(b)-4

(c)3

(d)2

5. If $\frac{x}{5\sqrt{6}}+1-\frac{-5\sqrt{6}}{x}$, Then find $x^5-750\sqrt{6}x^2+1$.

(a)$25\sqrt{6}$

(b)1

(c)0

(d)$5\sqrt{6}$

6. If $x^2-7x+13=0$, then

$$(x-3)^{22}+\frac{1}{(x-3)^{22}}$$

(a)3

(b)1

(c)-1

(d)-2

7. If $\frac{x}{3} + \frac{3}{x} = 1$, then x^3 ?

(a) 27

(b) -27

(c) 20

(d) 0

8. If $\frac{a}{4} + 1 = \frac{-4}{a}$, then $a^5 - 64a^2 + 1$?

(a) 1
(b) 2
(c) 3
(d) 4

9. If $x(x-1) = -1$, then $x^4-6x^3+9x^2-8x+11$

(a)7
(b)0
(c)8
(d)5

10. If $7a + \frac{7}{a} = \sqrt{98}$. Find $a^{17} + \frac{1}{a^{25}} = ?$

(a)$\sqrt{2}$

(b)$\sqrt{3}$

(c)1

(d)None

11. If $x + \frac{1}{x} = -1$, then the value of $x^{15} + \frac{1}{x^{15}}$ will be

(a) 3

(b) 2

(c) -1

(d) 0

CHSL 2023

Type 7

1. 1. If $a^4 + b^4 + a^2b^2 = 133$, and $a^2 + b^2 - ab = 19$, then value of ab will be:

(A) –9

(B) –6

(C) 12

(D) 15

(SSC CHSL Tier I : 2021)

2. If $x^4 + y^4 - 3x^2y^2 = 12$, $x^2 - y^2 + xy = 6$. Find $x^2 - y^2$

(A) 4

(B) 2

(C) 3

(D) None

3. If $x^4 + x^2y^2 + y^4 = \frac{21}{256}$ and $x^2 - xy + y^2 = \frac{3}{16}$ then $2(x^2 + y^2) = ?$

(A) 5/16

(B) 5/8

(C) 3/8

(D) ¾

(SSC CPO : 2019)

4. If $1 + 9r^2 + 81r^4 = 256$, and $1-3r+9r^2=32$, then then value of $1–3r+9r^2$.

(A) 8

(B) 4

(C) 16

(D) 17

(SSC CHSL Tier I : 2019)

5. If a + b – $\sqrt{ab}$ = 39, then $\frac{a+b+\sqrt{ab}}{a^2+b^2+ab}$ = ?

(A) 1/39

(B) 1

(C) 5/39

(D) 0

6. If $a^2+b^2 = x$ and $ab = y$, then the value of $\frac{a^4+b^4}{a^2-\sqrt{2ab}+b^2}$?

(A) x + y

(B) $\sqrt{2}$x + y

(C) x + 2y

(D) x + 2y

7. $x^4 + y^4 + x^2y^2 = 117$

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

$x^2+y^2 = ?$

(A) 9

(B) 12

(C) $6\sqrt{3}$

(D) $13\sqrt{3}$

SSC CHSL : 2020

Type 8

1. If $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=1$, then

$$\left(\frac{1}{z-1}\right)\left(\frac{1}{x}+\frac{1}{y}\right)+\left(\frac{1}{y-1}\right)\left(\frac{1}{x}+\frac{1}{z}\right)+\left(\frac{1}{x-1}\right)\left(\frac{1}{y}+\frac{1}{z}\right)=?$$

(A) 1

(B) –1

(C) 2

(D) 0

(DP Head Constable : 2022)

2. If $\frac{a}{1-2a}+\frac{b}{1-2b}+\frac{c}{1-2c}=\frac{1}{2}, find$

$$\frac{1}{1-2a}+\frac{1}{1-2b}+\frac{1}{1-2c}$$

(A) 3

(B) 4

(C) 6

(D) 8

SSC CHSL : 2021

3. If $x=\frac{a-b}{a+b}, y=\frac{b-c}{b+c}, z=\frac{c-a}{c+a}$, then

$$\frac{(1-x)(1-y)(1-z)}{(1+x)(1+y)(1+z)}$$

(a)1

(b)2

(c)0

(d)1/2

4. If a + b + c = abc, then

$$\frac{(1-a^2)(1-b^2)}{ab}+\frac{(1-b^2)(1-c^2)}{bc}+\frac{(1-c^2)(1-a^2)}{ca}$$

(a)0

(b)2

(c)4

(d)3

5. If xy + yz + zx = 1, then

$$\left(\frac{x+y}{1-xy}+\frac{y+z}{1-yz}+\frac{z+x}{1-zx}\right)$$ **?**

(A) xyz

(B) 1/xyz

(C) 1

(D) 3

6. If abc = 1, then

$$\frac{a+1}{ab+a+1}+\frac{b+1}{bc+b+1}+\frac{c+1}{ca+c+1}=?$$

(a)1

(b)2

(c)3

(d)1/3

7. If $xy+yz+zx = 1$, then

$$\frac{1+x^2}{(x+y)(z+x)} + \frac{1+y^2}{(y+z)(x+y)} + \frac{1+z^2}{(z+x)(y+z)} \; ?$$

(A) 1

(B) 2

(C) 3

(D) 4

8. If $x^2 + y^2 = z + 1$, $y^2 + z^2 = x + 1$ and $z^2 + x^2 = y + 1$, then find out the value of xyz.

(A) –1

(B) –1 or –1/8

(C) 1 or –1/8

(D) –1 or 1/8

9. If $a^2 = b + c$, $b^2 = c + a$ and $c^2 = a + b$, then $\frac{1}{1+a} + \frac{1}{1+b} + \frac{1}{1+c}$?

(A) 0

(B) 2

(C) 4

(D) 1

10. If $\frac{x+a}{b+c}+\frac{x+b}{c+a}+\frac{x+c}{a+b}=-3$**, then x = ?**

(A) $a+b+c$

(B) $-a-b-c$

(C) $(a+b+c)^2$

(D) $\sqrt{a+b+c}$

11. If $\frac{(x+a)^2}{b+c} + \frac{(x-b)^2}{c+a} + \frac{(x-c)^2}{a+b} = 4(a + b + c)$, **then x?**

(A) $(a + b + c)^2$

(B) $a^2 + b^2 + c^2$

(C) $a + b + c$

(D) $a - b - c$

12. If $\frac{x+a^2+2c^2}{b+c}+\frac{x+b^2+2a^2}{c+a}+\frac{x+c^2+2b^2}{a+b}=0$, **then x.**

(A) $a^2+b^2+c^2$

(B) $-a^2-b^2-c^2$

(C) $a+b+c$

(D) None