

ALGEBRA

SHEET - 04

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 Rankers Gurukul

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MATHS EXPERT

ALGEBRA (बीजगणित)

(Practice Sheet – 4) (MISCELLANEOUS)

1. Find the value of
$$\frac{(123+77)^2 + (123-77)^2}{(123)^2 + (77)^2}$$

(a) 0 (b) 1
(c) 2 (d) 4
2. Find the value of
$$\frac{(148+69)^2 - (148-69)^2}{148 \times 69}$$

(a) 2 (b) 4
(c) 1 (d) 0
3. $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \dots + \frac{1}{\sqrt{49}+\sqrt{48}}$

(a) 6 (b) 8
(c) 7 (d) 0
4. If $5^{\sqrt[3]{x}} + 12^{\sqrt[3]{x}} = 13^{\sqrt[3]{x}}$, then the value of x is :
SSC CHSL 5 July 2019 (Afternoon)

(a) 2 (b) 8
(c) 1 (d) 4
5. If $6^{\sqrt[4]{x}} + 8^{\sqrt[4]{x}} = 10^{\sqrt[4]{x}}$, then the value of x is :
SSC CHSL 8 July 2019 (Afternoon)

(a) 2 (b) 16
(c) 4 (d) 8
6. If $\sqrt{86-60\sqrt{2}} = a-b\sqrt{2}$, then what will be the value of $\sqrt{a^2+b^2}$, correct to one decimal place?
CGL Tier-II (11 September 2019)

(a) 8.4 (b) 8.2
(c) 7.8 (d) 7.2
7. If $x = \sqrt{1+\frac{\sqrt{3}}{2}} - \sqrt{1-\frac{\sqrt{3}}{2}}$, then the value of $\frac{\sqrt{2}-x}{\sqrt{2}+x}$ will be closest to :
CGL Tier-II (11 September 2019)

(a) 0.17 (b) 0.12
(c) 1.4 (d) 1.2
8. If $\sqrt{10-2\sqrt{21}} + \sqrt{8+2\sqrt{15}} = \sqrt{a} + \sqrt{b}$, where a and b are positive integers, then the value of $\sqrt{ab}$ is closest to :
CGL Tier-II (12 September 2019)

(a) 4.6 (b) 5.9
(c) 6.8 (d) 7.2
9. $ab(a-b) + bc(b-c) + ca(c-a)$ is equal to :
CGL Tier-II (13 September 2019)

(a) $(a+b)(b-c)(c-a)$
(b) $(a-b)(b+c)(c-a)$
(c) $(a-b)(b-c)(c-a)$
(d) $(b-a)(b-c)(c-a)$
10. Let $x = \sqrt[6]{27} - \sqrt[6]{\frac{3}{4}}$ and $y = \frac{\sqrt{45} + \sqrt{605} + \sqrt{245}}{\sqrt{80} + \sqrt{125}}$, then the value of $x^2 + y^2$ is :
CGL Tier-II (13 September 2019)

(a) $\frac{223}{36}$ (b) $\frac{221}{36}$
(c) $\frac{221}{9}$ (d) $\frac{227}{9}$
11. If $x^4 + x^2y^2 + y^4 = 21$ and $x^2 + xy + y^2 = 7$, then the value of $\left(\frac{1}{x^2} + \frac{1}{y^2}\right)$ is :
SSC CGL 3 March 2020 (Afternoon)

(a) $\frac{5}{2}$ (b) $\frac{7}{4}$
(c) $\frac{5}{4}$ (d) $\frac{7}{3}$
12. If $x^4 + x^2y^2 + y^4 = 273$ and $x^2 - xy + y^2 = 13$, then the value of xy is :
SSC CGL 5 March 2020 (Afternoon)

(a) 4 (b) 8
(c) 10 (d) 6
13. If $16a^4 + 36a^2b^2 + 81b^4 = 91$ and $4a^2 + 9b^2 - 6ab = 13$, then what is the value of $3ab$?
SSC CGL 4 March 2020 (Morning)

(a) -3 (b) $\frac{3}{2}$
(c) 5 (d) $-\frac{3}{2}$

14. If $3^a = 27^b = 81^c$ and $abc = 144$, then the value of $12\left(\frac{1}{a} + \frac{1}{2b} + \frac{1}{5c}\right)$ is :
SSC CGL 6 March 2020 (Morning)
- (a) $\frac{17}{120}$ (b) $\frac{18}{10}$
(c) $\frac{18}{120}$ (d) $\frac{33}{10}$
15. The value of $5\sqrt{3} + 7\sqrt{2} - \sqrt{6} - \frac{23}{\sqrt{2} + \sqrt{3} + \sqrt{6}}$ is :
CHSL 14/10/2020 (Afternoon)
- (a) 0 (b) 16
(c) 12 (d) 10
16. If $\frac{8+2\sqrt{3}}{3\sqrt{3}+5} = a\sqrt{3} - b$, then the value of $a + b$ is equal to :
CGL 2019 Tier-II (18/11/2020)
- (a) 18 (b) 15
(c) 16 (d) 24
17. If $2 = x + \frac{1}{1 + \frac{1}{5 + \frac{1}{2}}}$, then the value of x is equal to :
CGL 2019 Tier-II (18/11/2020)
- (a) $\frac{14}{13}$ (b) 1
(c) $\frac{15}{13}$ (d) $\frac{13}{15}$
18. If $2^{x+y-2z} = 8^{8z-5-y}$; $5^{4y-6z} = 25^{y+z}$; $3^{4x-3z} = 9^{x+z}$ then the value of $2x + 3y + 5z$ is :
CHSL 13/10/2020 (Morning)
- (a) 56 (b) 44
(c) 32 (d) 28
19. If $47.2506 = 4A + \frac{7}{B} + 2C + \frac{5}{D} + 6E$ then the value of $5A + 3B + 6C + D + 3E$ is
(a) 53.6003 (b) 53.603
(c) 153.6003 (d) 213.0003
20. If $x^{x\sqrt{x}} = (x\sqrt{x})^x$, then x equals
(a) $\frac{4}{9}$ (b) $\frac{2}{3}$
(c) $\frac{9}{4}$ (d) $\frac{3}{2}$
21. If $a^2 + a + 1 = 0$ then the value of $a^5 + a^4 + 1$ is :
(a) a^2 (b) 1
(c) 0 (d) $a + 1$
22. If $x = 16$, then $x^4 - 17x^3 + 17x^2 - 17x + 17$ is
(a) 0 (b) 1
(c) 4 (d) 3
23. If $x = 11$, then $x^5 - 12x^4 + 12x^3 - 12x^2 + 12x - 1$ is
(a) 5 (b) 10
(c) 15 (d) 20
24. If $x = 86$ then $x^7 - 87x^6 + 87x^5 - 87x^4 + 87x^3 - 87x^2 + 87x + 50 = ?$ is
(a) 126 (b) 136
(c) 146 (d) 156
25. If $x = \frac{\sqrt{3}}{2}$ then the value of $\frac{\sqrt{1+x} + \sqrt{1-x}}{\sqrt{1+x} - \sqrt{1-x}}$ is
(a) $-\sqrt{3}$ (b) 1
(c) -1 (d) $\sqrt{3}$
26. If $x = \frac{\sqrt{3}}{2}$ then find $\frac{\sqrt{1+x}}{1+\sqrt{1+x}} + \frac{\sqrt{1-x}}{1-\sqrt{1-x}}$ is
(a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{2}$
(c) $\frac{2}{\sqrt{3}}$ (d) 1
27. 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
28. If $a-b+5 = 0$ & $(x-a)(x-b) = 1$ then find $(x-a)^3 - \frac{1}{(x-a)^3}$.
(a) 110 (b) 140
(c) 105 (d) 115
29. If $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}} + \frac{x-\sqrt{x^2-1}}{x+\sqrt{x^2-1}} = 34$. Find x .
(a) -1 (b) -2
(c) ± 3 (d) -4

30. If then $\sqrt{3x^2 - 12x + 19} + \sqrt{3x^2 - 12x - 11} = 6$

then $\sqrt{3x^2 - 12x + 19} - \sqrt{3x^2 - 12x - 11} = ?$

- (a) 4 (b) 3
(c) 0 (d) 5

31. If $\sqrt{x^2 - 12x + 7} + \sqrt{x^2 - 12x - 7} = 2$ then find

the value of $\sqrt{x^2 - 12x + 7} - \sqrt{x^2 - 12x - 7} = ?$

- (a) 0 (b) 1
(c) 7 (d) 9

32. If $ax + by = 4$, $bx - ay = 3$, $x^2 + y^2 = 5$ find $a^2 + b^2 = ?$

- (a) 15 (b) 5
(c) 35 (d) None

33. If $x^3 + y^3 + z^3 = 3(1 + xyz)$, $P = y + z - x$, $Q = z + x - y$, $R = x + y - z$ then what is the value of

$P^3 + Q^3 + R^3 - 3PQR = ?$

- (a) 9 (b) 8
(c) 12 (d) 6

Answer Key

1.(c)	2.(b)	3.(a)	4.(b)	5.(b)	6.(c)	7.(a)	8.(b)	9.(d)	10.(a)
11.(c)	12.(a)	13.(d)	14.(d)	15.(c)	16.(a)	17.(c)	18.(b)	19.(c)	20.(c)
21.(c)	22.(b)	23.(b)	24.(b)	25.(d)	26.(c)	27.(b)	28.(b)	29.(c)	30.(d)
31.(c)	32.(b)	33.(c)							