



SUBHASH SIR  
3 TIMES SSC CGL WINNER

## ALGEBRA

- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $a^2 - b^2 = (a + b)(a - b)$
- $a^2 + b^2 = (a + b)^2 - 2ab = (a - b)^2 + 2ab$
- $(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$
- $(a + b)^2 - (a - b)^2 = 4ab$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$
- $(ax+by)^2 + (ay-bx)^2 = (a^2+b^2)(x^2+y^2)$
- $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3 = a^3 + b^3 + 3ab(a + b)$
- $(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3 = a^3 - b^3 - 3ab(a - b)$
- $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
- $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- $(a+b) = \frac{a^3+b^3}{a^2+b^2-ab}$
- $(a-b) = \frac{a^3-b^3}{a^2+b^2+ab}$
- $(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$
- $(a - b)^4 = a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4$
- $a^4 - b^4 = (a - b)(a + b)(a^2 + b^2)$
- If  $a + b + c = 0$ , then  $a^3 + b^3 + c^3 = 3abc$
- $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

5.  $(4x - 3y)(4x + 3y)(16x^2 + 9y^2) = ?$ 
  - (a)  $256x^4 - 81y^4$
  - (b)  $16x^4 - 9y^4$
  - (c)  $48x^4 - 36y^4$
  - (d)  $36x^3 - 48y^3$
6.  $(m - n)(m^2 + n^2)(m^4 + n^4)(m^8 + n^8)(m^{16} + n^{16}) = ?$ 
  - (a)  $(m^{16} - n^{16}) \div (m + n)$
  - (b)  $(m^{32} - n^{32}) \div (m + n)$
  - (c)  $(m^{32} + n^{32}) \div (m + n)$
  - (d)  $(m^{16} + n^{16}) \div (m + n)$
7.  $(x + y + 2z)(x + y) = ?$ 
  - (a)  $(x + y + z)^2 - y^2$
  - (b)  $(x + y + z)^2 - x^2$
  - (c)  $(x + y + z)^2 - z^2$
  - (d)  $(x - y + z)^2 - z^2$
8.  $m = -9$  and  $n = 13$  then  $25m^2 + 40mn + 16n^2 = ?$ 
  - (a) 81
  - (b) 49
  - (c) 100
  - (d) 16
9.  $x + \frac{16}{x} = 8 ; x^2 + \frac{256}{x^2} = ?$ 
  - (a) 32
  - (b) 64
  - (c) 1/32
  - (d) 1/64
10.  $x + \frac{81}{x} = 18 ; x^2 + \frac{162}{x^2} = ?$ 
  - (a) 78
  - (b) 83
  - (c) 729
  - (d) 324
11.  $7x - 10y = 8$  and  $xy = 5$  then  $49x^2 + 100y^2 = ?$ 
  - (a) 632
  - (b) 623
  - (c) 746
  - (d) 764
12.  $(49a^2 + 25b^2) = 30$ ,  $ab = 1$  and  $a, b > 0$  then find the value of  $(7a + 5b)$ ?
  - $(49a^2 + 25b^2) = 30$ ,  $ab = 1$  మరియు  $a, b > 0$  అయిన  $(7a + 5b)$  విలువ ఎంత?
  - (a) 35
  - (b) 12
  - (c) 10
  - (d) 100
13.  $x^2 + 25y^2 = 10xy ; x : y = ?$ 
  - (a) 5 : 1
  - (b) 2 : 3
  - (c) 1 : 5
  - (d) 3 : 5
14. Find the approximate value of  $(2.697 + 0.498)^2 - (2.697 - 0.498)^2$ ?
  - $(2.697 + 0.498)^2 - (2.697 - 0.498)^2$  యొక్క సుమారు విలువ?
  - (a) 2.199
  - (b) 3.195
  - (c) 5.37
  - (d) 2.991
15.  $[(974 + 479)^2 - (974 - 479)^2] \div (479 \times 974) = ?$ 
  - (a) 4
  - (b) 495
  - (c) 479
  - (d) 974
16.  $(6a + 5b)^2 + (6a - 5b)^2 = ?$

- (a)  $50a^2 + 72b^2$  (b)  $72a^2 + 50b^2$   
 (c)  $50a^2 - 72b^2$  (d)  $72a^2 - 36b^2$
17.  $[(65.4)^2 + (32.8)^2] \div [(654 + 328)^2 + (654 - 328)^2] = ?$   
 (a) 0.5 (b) 0.05 (c) 0.005 (d) 0.0005
18. If  $a + b = 56$  and  $(a - b)^2 = 496$  then find the product of a and b.  
 $a + b = 56$  మరియు  $(a - b)^2 = 496$  అయిన a మరియు b లబ్ధం?  
 (a) 460 (b) 760 (c) 560 (d) 660
19. If  $x = \sqrt{10} + \sqrt{11}$  and  $y = \sqrt{10} - \sqrt{11}$  then find the value of  $7x^2 - 50xy + 7y^2$ ?  
 $x = \sqrt{10} + \sqrt{11}$  మరియు  $y = \sqrt{10} - \sqrt{11}$  అయిన  $7x^2 - 50xy + 7y^2$  విలువ ఎంత?  
 (a) 386 (b) 344 (c) 704 (d) 1360
20.  $a + \frac{1}{a} = \sqrt{29}$ ;  $a - \frac{1}{a} = ?$   
 (a) 3 (b) 4 (c) 5 (d) 2
21.  $x^2 - 5x - 1 = 0$ ;  $x + \frac{1}{x} = ?$   
 (a)  $\sqrt{39}$  (b) 4 (c)  $\sqrt{29}$  (d) 25
22.  $x = 2 - \sqrt{3}$ ;  $x - \frac{1}{x} = ?$   
 (a)  $3\sqrt{3}$  (b)  $-2\sqrt{3}$   
 (c)  $5\sqrt{3}$  (d)  $12 - 30\sqrt{3}$
23.  $p = 5 - 2\sqrt{6}$ ;  $p^2 + \frac{1}{p^2} = ?$   
 (a)  $\sqrt{6} - \sqrt{5}$  (b) 100  
 (c)  $25 + \sqrt{6}$  (d) 98
24.  $x = 8 + 3\sqrt{7}$ ;  $\sqrt{x} + \frac{1}{\sqrt{x}} = ?$   
 (a)  $\sqrt{14}$  (b)  $6\sqrt{7}$  (c) 18 (d)  $3\sqrt{2}$
25.  $\frac{x-1}{x} = 3$ ;  $\frac{x^2+1}{x^2} = ?$   
 (a) 3 (b) 11 (c) 5 (d) 7
26.  $\frac{x+1}{x} = 2$ ;  $x^2 + \frac{1}{x^2} = ?$   
 (a) 5 (b) 4 (c) 1 (d) 2
27.  $x^2 + \frac{2x}{5} + \frac{1}{25} = 0$ ;  $\left(x - \frac{2}{3}\right)^2 = ?$   
 (a)  $169/225$  (b)  $225/169$  (c)  $27/125$  (d)  $125/27$
28.  $x^2 + \frac{1}{x^2} = 6$ ;  $\left(10x - \frac{10}{x}\right) = ?$   
 (a)  $+/-15$  (b)  $+/-20$  (c)  $+/-30$  (d)  $+/-40$
29.  $x^2 + a^2 = (b - x)^2$ ;  $x = ?$   
 (a)  $(b^2 + a^2) \div 2b$  (b)  $(a^2 - b^2) \div 2b$   
 (c)  $(b^2 - a^2) \div 2a$  (d)  $(b^2 - a^2) \div 2b$
30.  $a + b = 7$ , (a>b) and  $ab = 12$  then find  $a^4 - b^4 = ?$   
 $a + b = 7$ , (a>b) మరియు  $ab = 12$  అయిన  $a^4 - b^4$  విలువ కనుగొనుమా?

- (a) 100 (b) 125 (c) 150 (d) 175
31. If  $a^2 + b^2 = 25$ ,  $x^2 + y^2 = 17$  and  $ax + by = 8$  then find the value of  $(ay - bx)$ ?  
 $a^2 + b^2 = 25$ ,  $x^2 + y^2 = 17$  మరియు  $ax + by = 8$  అయిన  $(ay - bx)$  విలువ ఎంత?  
 (a) 23 (b) 25 (c) 21 (d) 19
32. Find the value of  $a^2 + b^2 + c^2 - 2ab + 2ac - 2bc$ , if  $a = x + y$ ,  $b = x - y$  and  $c = 2x - 1$  అయిన  $a^2 + b^2 + c^2 - 2ab + 2ac - 2bc$  విలువ ఎంత?  
 (a)  $(x - y - 1)^2$  (b) 0  
 (c)  $(2x + 2y - 1)^2$  (d)  $(2x - 2y - 1)^2$
33.  $a + b + c = 0$ ;  $\frac{(b+c)^2}{bc} + \frac{(c+a)^2}{ca} + \frac{(a+b)^2}{ab} = ?$   
 (a)  $a^2 + b^2 + c^2$  (b)  $2(a + b + c)^2$   
 (c)  $8abc$  (d) 3
34. If  $a(a + b + c) = 45$ ;  $b(a + b + c) = 75$  and  $c(a + b + c) = 105$  then find the value of  $a^2 + b^2 + c^2$ .  
 $a(a + b + c) = 45$ ;  $b(a + b + c) = 75$  మరియు  $c(a + b + c) = 105$  అయిన  $a^2 + b^2 + c^2$  విలువ ఎంత?  
 (a) 83 (b) 225 (c) 625 (d) 90
35. For real numbers a, b and c if  $a^2 + b^2 + c^2 = ab + bc + ca$ , then find the value of  $(a + b + c)^2$ .  
 a, b మరియు c లు వాస్తవ సంఖ్యలు మరియు  $a^2 + b^2 + c^2 = ab + bc + ca$  అయిన  $(a + b + c)^2$  విలువ ఎంత?  
 (a)  $9a^2$  (b)  $81a^2$  (c)  $27a^2$  (d)  $243a^2$
36.  $8x^3 + 27y^3 + 36x^2y + 54xy^2 = ?$   
 (a)  $(2x+3y)^3$  (b)  $(2x+5y)^3$   
 (c)  $(4x+4y)^3$  (d)  $(2x-3y)^3$
37. If  $a + b = 48$  &  $ab = 56$  then of  $a^3 + b^3 = ?$   
 (a) 201472 (b) 105197 (c) 102528 (d) 202729
38.  $64x^6 - y^6 = ?$   
 (a)  $(2x - y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy - y^2)$   
 (b)  $(2x - y)(2x + y)(4x^2 - 2xy + y^2)(4x^2 - 2xy + y^2)$   
 (c)  $(2x - y)(2x + y)(4x^2 - 2xy + y^2)(4x^2 - 2xy - y^2)$   
 (d)  $(2x - y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy + y^2)$
39. If  $a^3 - b^3 = 2349$  &  $(a - b) = 9$  then  $(a + b)^2 - ab = ?$   
 (a) 261 (b) 280 (c) 229 (d) 244
40.  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = \sqrt{3}$  and  $\frac{a}{x} + \frac{b}{y} + \frac{c}{z} = 0$  then  $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = ?$   
 (a) 0 (b) 3 (c)  $\sqrt{3}$  (d) 9

41. If  $a + b = 10$  and  $a^2 + b^2 = 68$ , find  $a^3 + b^3$ ?  
 (a) 620    (b) 560    (c) 520    (d) 540

42. Expand :  $(s + 2)^3$   
 (a)  $s^3 + 3s^2 + 12s + 8$     (b)  $s^3 + 3s^2 + 6s + 8$   
 (c)  $s^3 + 6s^2 + 12s + 8$     (d)  $s^3 + 6s^2 + 6s + 8$

43. If  $x + y = 1$ , then  $x^3 + y^3 + 3xy - 1 = ?$   
 (a) 0    (b) 1    (c) 5    (d) 2

44. What is the value of  $8x^3 + 18xy + y^3 - 27$  when  $2x + y - 3 = 0$ .  
 $2x + y - 3 = 0$  அலைப்பட்டு  $8x^3 + 18xy + y^3 - 27$  யீடுகள் விலுவ எங்க?

(a) 27    (b) -27    (c) 0    (d) 1

45. If  $a+b+c = 0$  then  $a^3 + b^3 + c^3 = ? \times abc$   
 (a) 1    (b) 4    (c) 3    (d) 2

46. If  $a + b + c = 0$ , then  $(a^3 + b^3 + c^3)^2 = ?$   
 (a)  $3a^2b^2c^2$     (b)  $9a^2b^2c^2$   
 (c)  $9abc$     (d)  $27abc$

47.  $(x-y)^3 + (y-z)^3 + (z-x)^3 = ?$   
 (a)  $3xyz$   
 (b)  $(x-y)(y-z)(z-x)$   
 (c)  $3(x-y)(y-z)(z-x)$   
 (d)  $(x+y+z)(x^2+y^2+z^2)$

48.  $\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)} = ?$   
 (a) 1    (b) 4    (c) 0    (d) 2

49. If  $x^{1/3} + y^{1/3} - z^{1/3} = 0$ , then find the value of  $(x + y - z)^3 + 27xyz$ ?  
 (a)  $x^3 + y^3 - z^3$     (b)  $-z^3$   
 (c) 1    (d) 0

50. If  $x = 12$  and  $y = 7$ , then the value of  $(x^2 + y^2 - xy) \div (x^3 + y^3)$ ?  
 (a)  $1/5$     (b)  $2/19$     (c)  $1/2$     (d)  $1/19$

51. If  $a^3 - b^3 = 625$ ,  $a^2 - b^2 = 25$  and  $a + b = 5$  then the value of  $a^2 + ab + b^2$  is:  
 $a^3 - b^3 = 625$ ,  $a^2 - b^2 = 25$  முள்ளு  $a + b = 5$  அலைப்பட்டு  $a^2 + ab + b^2$  யீடுகள் விலுவங்கள் கண்டால்கூடும்?  
 (a) 150    (b) 125    (c) 5    (d) 25

52. If  $(a + b) = 16$  and  $a^3 + b^3 = 1456$  then find  $ab$ ?  
 (a) 50    (b) 48    (c) 64    (d) 55

53. If  $(u - v) = 4$  and  $uv = 20$  then find  $u^3 - v^3$ ?  
 (a) 224    (b) 304    (c) 64    (d) 176

54. If  $(x+y) = 13$  and  $x^2 + y^2 = 101$  then find  $x^3 + y^3$ ?  
 (a) 767      (b) 949      (c) 793      (d) 871

55. If  $(3a + 4b) = 2$  and  $ab = 1/36$  then find  $27a^3 + 64b^3$ ?  
 (a) 6      (b) 4      (c) 2      (d) 8

56.  $(16x^2 + y^2) = 48$ , and  $xy = 2$  then find  $(64x^3 + y^3)$ ?  
 (a) 320      (b) 340      (c) 240      (d) 300

57.  $(p - 2q) = 3$  and  $pq = 5$  then find  $(p^3 - 8q^3)$ ?  
 (a) -63      (b) 117      (c) 72      (d) 27

58. If  $3x - 2y = 10$  and  $xy = 11$  then find the value of  $27x^3 - 8y^3$ ?  
 $3x - 2y = 10$  മുഖ്യമായ  $xy = 11$  അല്ലെങ്കിൽ  $27x^3 - 8y^3$  യൊക്കേ വിലുണ്ടു് കണ്ണുകൂടാനുമുണ്ടു്?  
 (a) 2569      (b) 3336      (c) 3170      (d) 2980

59.  $x^3 = y^3 + 270$  and  $x = (6 + y)$  then find  $(x + y)$ ?  
 (a)  $2\sqrt{3}$       (b)  $\sqrt{3}$       (c)  $4\sqrt{3}$       (d)  $4\sqrt{2}$

60.  $a = b^2/(a - b)$  then find  $a^3 + b^3$ ?  
 (a) 0      (b) 6      (c) 5      (d) 4

61.  $p = 999$  then find  $\sqrt[3]{p(p^2 + 3p + 3) + 1}$ ?  
 (a) 1000      (b) 999      (c) 998      (d) 1002

62.  $x + 3y = 6$  and then find  $x^3 + 27y^3 + 54xy$ ?  
 (a) 216      (b) 258      (c) 264      (d) 220

63.  $\frac{(5p-q)^3 - (3p-2q)^3 - (q+2p)^3}{13pq - 15p^2 - 2q^2} = ?$   
 (a)  $6p - 3p$       (b)  $-6p + 3q$   
 (c)  $6p + 3q$       (d)  $-6p - 3q$

64.  $\frac{(4x^2 - 9y^2)^3 + (9y^2 - 49z^2)^3 + (49z^2 - 4x^2)^3}{(2x - 3y)^3 + (3y - 7z)^3 + (7z - 2x)^3} = ?$   
 (a)  $(2x - 3y)(3y - 7z)(7z - 2x)$   
 (b)  $(2x + 3y)(3y + 7z)(7z + 2x)$   
 (c)  $(2x + 3y)(3y - 7z)(7z + 2x)$   
 (d)  $(2x - 3y)(3y + 7z)(7z - 2x)$

65.  $\frac{(x^3 - y^3)(x^2 + 5x + 6)(x^4 - 16)}{(x - y)(x + 3)(x - 2)(x^2 + 4)} = ?$   
 (a)  $(x^2 + y^2 - xy)$   
 (b)  $(x^2 + y^2 + xy)(x + 2)^2$   
 (c)  $(x^2 + y^2 - xy)(x + 2)^2$   
 (d)  $(x + 2)^2$

66. If  $a = 5$ ,  $b = 4$ ,  $c = 8$  then find the value of  $(a^3 + b^3 + c^3 - 3abc) / (ab + bc + ca - a^2 - b^2 - c^2)$ ?  
 (a) 15      (b) 17      (c) -17      (d) -15

67. If  $p + q + r = 13$  and  $pq + qr + rp = 30$ , then the value of  $p^3 + q^3 + r^3 - 3pqr$  is :  
 (a) 15      (b) 17      (c) -17      (d) -15

- (a) 1125 (b) 1145 (c) 1027 (d) 1216  
 68. If  $a+b+c = 16$  and  $ab+bc+ca = 78$ . Find the value of  $a^3+b^3+c^3-3abc$ .

$a+b+c = 16$  මුළයු  $ab+bc+ca = 78$  අයාන්  $a^3+b^3+c^3-3abc$  යොකු විලුව නියමිත?

- (a) 218 (b) 352 (c) 320 (d) 220  
 69. If  $a+b+c = 9$  and  $a^2+b^2+c^2 = 29$  then find the value of  $a^3+b^3+c^3-3abc$ .

$a+b+c = 9$  මුළයු  $a^2+b^2+c^2 = 29$  අයාන්  $a^3+b^3+c^3-3abc$  යොකු විලුව නියමිත?

- (a) 9 (b) 27 (c) 3 (d) 81  
 70. If  $a+b+c = 2s$ , then find the value of  $(s-a)^3 + (s-b)^3 + 3(s-a)(s-b)c$ .

$a+b+c = 2s$  අයාන්  $(s-a)^3 + (s-b)^3 + 3(s-a)(s-b)c$  යොකු විලුව නියමිත?

- (a) 2s (b)  $c^2$  (c)  $c^3$  (d)  $ac$   
 71. If  $a^3+b^3+c^3-3abc = 0$  then find the value of  $(a^2/bc+b^2/ac-3)$ .

$a^3+b^3+c^3-3abc = 0$  අයාන්  $(a^2/bc+b^2/ac-3)$  යොකු විලුවනු ක්‍රියාත්මක?

- (a)  $-c^2/ab$  (b)  $-c^2/bc$   
 (c)  $-c^3/ba$  (d)  $-c/a$

- $x + \frac{1}{x} = a \Rightarrow x^2 + \frac{1}{x^2} = a^2 - 2$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^2 + \frac{1}{x^2} = a^2 + 2$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^3 + \frac{1}{x^3} = a^3 - 3a$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^3 - \frac{1}{x^3} = a^3 + 3a$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^4 + \frac{1}{x^4} = a^4 - 4a^2 + 2$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^4 + \frac{1}{x^4} = a^4 + 4a^2 + 2$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^5 + \frac{1}{x^5} = a^5 - 5a^3 + 5a$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^5 - \frac{1}{x^5} = a^5 + 5a^3 + 5a$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^6 + \frac{1}{x^6} = a^6 - 6a^4 + 9a^2 - 2$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^6 + \frac{1}{x^6} = a^6 + 6a^4 + 9a^2 + 2$   
 ➤  $x + \frac{1}{x} = 2 \Rightarrow x = 1$   
 ➤  $x + \frac{1}{x} = -2 \Rightarrow x = -1$   
 ➤  $x + \frac{1}{x} = 1 \Rightarrow x^3 = -1$   
 ➤  $x + \frac{1}{x} = -1 \Rightarrow x^3 = 1$   
 ➤  $x^2 + \frac{1}{x^2} = a \Rightarrow x + \frac{1}{x} = \pm\sqrt{a+2}$   
 ➤  $x^2 + \frac{1}{x^2} = a \Rightarrow x - \frac{1}{x} = \pm\sqrt{a-2}$

- $x + \frac{1}{x} = a \Rightarrow x - \frac{1}{x} = \pm\sqrt{a^2 - 4}$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x + \frac{1}{x} = \pm\sqrt{a^2 + 4}$   
 ➤  $x + \frac{1}{x} = \sqrt{a} \Rightarrow x^3 + \frac{1}{x^3} = (a-3)\sqrt{a}$   
 ➤  $x - \frac{1}{x} = \sqrt{a} \Rightarrow x^3 - \frac{1}{x^3} = (a+3)\sqrt{a}$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^4 + \frac{1}{x^4} = (a^2 - 2)^2 - 2$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^4 + \frac{1}{x^4} = (a^2 + 2)^2 - 2$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^5 + \frac{1}{x^5} = (a^2 - 2)(a^3 - 3a) - a$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^5 - \frac{1}{x^5} = (a^2 + 2)(a^3 + 3a) - a$   
 ➤  $x + \frac{1}{x} = a \Rightarrow x^6 + \frac{1}{x^6} = (a^3 - 3a)^2 - 2$   
 ➤  $x - \frac{1}{x} = a \Rightarrow x^6 + \frac{1}{x^6} = (a^3 + 3a)^2 + 2$

72.  $x + \frac{1}{x} = 3$  then find  $x^2 + \frac{1}{x^2} = ?$   
 (a) 7 (b) 8 (c) 9 (d) 11

73.  $a - \frac{1}{a} = 7$  then find  $a^2 + \frac{1}{a^2} = ?$   
 (a) 52 (b) 50 (c) 49 (d) 51

74.  $x = 4 + \sqrt{15}$  then find  $x^2 + \frac{1}{x^2} = ?$   
 (a) 48 (b) 54 (c) 72 (d) 62

75.  $x = \sqrt{3} + \sqrt{2}$  then find  $x^2 + \frac{1}{x^2} = ?$   
 (a)  $2\sqrt{3}$  (b) 14 (c) 12 (d) 10

76.  $p = 5 - 2\sqrt{6}$  then find  $p^2 + \frac{1}{p^2} = ?$   
 (a)  $\sqrt{6} - \sqrt{5}$  (b) 100  
 (c)  $25 + \sqrt{6}$  (d) 98

77.  $x^2 - 4x + 1 = 0$  then find  $x^2 + \frac{1}{x^2} = ?$   
 (a) 14 (b) 15 (c) 18 (d) 16

78.  $x - \frac{1}{x} = 3$  then find  $x^4 + \frac{1}{x^4} = ?$   
 (a) 129 (b) 119 (c) 14 (d) 123

79.  $\sqrt{x} + \frac{1}{\sqrt{x}} = 3$  then find  $x^2 + \frac{1}{x^2} = ?$   
 (a) 51 (b) 47 (c) 53 (d) 49

80.  $\sqrt{x} + \frac{1}{\sqrt{x}} = 2\sqrt{3}$  then find  $x^4 + \frac{1}{x^4} = ?$   
 (a) 10402 (b) 9606  
 (c) 9602 (d) 10406

81.  $x^2 - 3x + 1 = 0$  then find  $2\left(x^8 + \frac{1}{x^8}\right) - 5\left(x^2 + \frac{1}{x^2}\right) = ?$   
 (a) 3479 (b) 4379 (c) 4370 (d) 4279

82.  $5a + \frac{4}{a} - 2 = 13$  then find  $(25a^2 + \frac{16}{a^2}) = ?$   
 (a) 185 (b) 175 (c) 223 (d) 157

83.  $x - \frac{1}{x} = 11$  then find  $x^4 + \frac{1}{x^4} = ?$   
 (a) 14159 (b) 14163  
 (c) 15127 (d) 15131

84.  $x - \frac{2}{x} = 4$  then find  $x^2 + \frac{4}{x^2} = ?$   
 (a) 20 (b) 15 (c) 18 (d) 22
85.  $4x + \frac{1}{(4x-9)} = 16$  then find  $(4x-9)^2 + \frac{1}{(4x-9)^2} = ?$   
 (a) 27 (b) 51 (c) 47 (d) 23
86.  $x^4 + \frac{1}{x^4} = 6239$  then find  $x + \frac{1}{x} = ?$   
 (a)  $1/\sqrt{12}$  (b) 10  
 (c)  $\sqrt{6239}$  (d) 9
87.  $x^4 + x^{-4} = 1154$  then find  $x + x^{-1} = ?$   
 (a) 12 (b) 6 (c) 8 (d) 5
88.  $x^2y^2 + \frac{1}{x^2y^2} = 123$  then find  $xy - \frac{1}{xy} = ?$   
 (a) 10 (b) 11 (c) 9 (d)  $\sqrt{11}$
89.  $x^{2n} + \frac{1}{x^{2n}} = k$  then find  $x^n - \frac{1}{x^n} = ?$   
 (a)  $k + 2$  (b)  $k - 2$   
 (c)  $\sqrt{k - 2}$  (d)  $\sqrt{k + 2}$
90.  $x^8 - 2599x^4 + 1 = 0$  then find  $x - \frac{1}{x} = ?$   
 (a) 7 (b) 9 (c) 51 (d) 49
91.  $\frac{3p^2}{7} + \frac{7}{3p^2} = 6$  then find  $\frac{3p^2}{7} - \frac{7}{3p^2} = ?$   
 (a)  $3\sqrt{2}$  (b)  $2\sqrt{2}$  (c)  $5\sqrt{2}$  (d)  $4\sqrt{2}$
92.  $x = \frac{1}{x-3}$  then find  $x + \frac{1}{x} = ?$   
 (a)  $\sqrt{11}$  (b)  $\sqrt{17}$  (c)  $\sqrt{15}$  (d)  $\sqrt{13}$
93.  $5x - \frac{1}{4x} = 6$  then find  $25x^2 - \frac{1}{16x^2} = ?$   
 (a)  $6\sqrt{41}$  (b) 36 (c)  $\sqrt{246}$  (d)  $6\sqrt{31}$
94.  $x + \frac{1}{x} = 42$  then find  $x^3 + \frac{1}{x^3} = ?$   
 (a) 74,130 (b) 73,962  
 (c) 72,629 (d) 74,926
95.  $p + \frac{1}{p} = -30$  then find  $p^3 + \frac{1}{p^3} = ?$   
 (a) 27090 (b) 26910  
 (c) -26910 (d) -27090
96.  $x^2 - 6\sqrt{3}x + 1 = 0$  then find  $x^3 + \frac{1}{x^3} = ?$   
 (a)  $234\sqrt{3}$  (b)  $216\sqrt{3}$   
 (c)  $666\sqrt{3}$  (d)  $630\sqrt{3}$
97.  $x - \frac{1}{x} = \frac{3}{4}$  then find  $x^3 - \frac{1}{x^3} = ?$   
 (a)  $164/31$  (b)  $171/64$   
 (c)  $171/32$  (d)  $164/37$
98.  $\frac{a^2-1}{a} = 5$  then find  $\frac{a^6-1}{a^3} = ?$   
 (a) 130 (b) 125 (c) 120 (d) 140
99.  $x + \frac{1}{x} = \sqrt{13}$  then find  $x^3 - \frac{1}{x^3} = ?$   
 (a)  $4\sqrt{13}$  (b) 32 (c)  $6\sqrt{13}$  (d) 36
100.  $x - \frac{1}{x-2} = 6$  then find  $(x-2)^3 - \frac{1}{(x-2)^3} = ?$   
 (a) 76 (b) 84 (c) 231 (d) 201

101.  $x^2 + \frac{1}{x^2} = 3$  then find  $x^3 + \frac{1}{x^3} = ?$   
 (a)  $3\sqrt{5}$  (b)  $2\sqrt{5}$  (c)  $2\sqrt{3}$  (d)  $3\sqrt{3}$
102.  $x^4 + \frac{1}{x^4} = 194$  then find  $x^3 + \frac{1}{x^3} = ?$   
 (a) 54 (b) 56 (c) 52 (d) 62
103.  $x^4 + \frac{1}{x^4} = 322$  then find  $x^3 - \frac{1}{x^3} = ?$   
 (a) 76 (b) 67 (c) 70 (d) 84
104.  $x - \frac{1}{2x} = 4$  then find  $8x^3 - \frac{1}{x^3} = ?$   
 (a) 540 (b) 560 (c) 480 (d) 520
105.  $x^4 + \frac{1}{x^4} = 34$  then find  $x^6 + \frac{1}{x^6} = ?$   
 (a) 243 (b) 216 (c) 185 (d) 198
106.  $x - \frac{1}{x} = 4$  then find  $x^6 + \frac{1}{x^6} = ?$   
 (a) 4689 (b) 4786 (c) 5832 (d) 5778
107.  $n + \frac{1}{n} = -3$  then find  $n^6 + \frac{1}{n^6} = ?$   
 (a) 36 (b) 322 (c) 729 (d) 18
108.  $x - \frac{1}{x} = 2\sqrt{2}$  then find  $x^6 - \frac{1}{x^6} = ?$   
 (a)  $372\sqrt{6}$  (b)  $384\sqrt{6}$   
 (c)  $396\sqrt{6}$  (d)  $420\sqrt{6}$
109.  $x + \frac{1}{x} = 5$  then find  $x^5 + \frac{1}{x^5} = ?$   
 (a) 1050 (b) 2525 (c) 5050 (d) 5225
110.  $x + \frac{1}{x} = 4$  then find  $x^5 + \frac{1}{x^5} = ?$   
 (a) 1050 (b) 725 (c) 505 (d) 825
111.  $x^2 + \frac{1}{x^2} = 7$  then find  $x^5 + \frac{1}{x^5} = ?$   
 (a) 123 (b) 125 (c) 321 (d) 521
112.  $x + \frac{1}{x} = 3$  then find  $(x^3 + \frac{1}{x^3}) \div (x^2 + \frac{1}{x^2}) = ?$   
 (a)  $18/5$  (b)  $26/3$  (c)  $18/7$  (d)  $54/5$
113.  $x + \frac{1}{x} = 2$  then find  $x^{1823} + \frac{1}{x^{1823}} = ?$   
 (a) 1 (b) 1823 (c) 2 (d) 3646
114.  $x + \frac{1}{x} = 2$  then find  $(x^3 + \frac{1}{x^3}) \div (x^{18} + \frac{1}{x^{18}}) = ?$   
 (a) 1 (b) 6 (c) 2 (d)  $1/6$
115.  $x^2 - 2x + 1 = 0$  then find  $x^3 - \frac{1}{x^3} = ?$   
 (a) 2 (b) 0 (c) -2 (d) 14
116.  $x + \frac{1}{x-11} = 13$  then find  $(x-13)^{22} + \frac{1}{(x-13)^{23}} = ?$   
 (a) 0 (b) 13 (c) 2 (d) -2
117.  $x + \frac{1}{x} = 1$  then find  $x^{45} + \frac{1}{x^{45}} = ?$   
 (a) 2 (b) -2 (c) 0 (d) 1
118.  $\frac{x+y}{y} = -1$  then find  $x^3 - y^3 = ?$   
 (a)  $x-y$  (b)  $x+y$  (c) -1 (d) 0
119.  $(x + \frac{1}{x})^2 = 3$  then find  $x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1 = ?$   
 (a) 3 (b) 0 (c) 9 (d) 27
120.  $(12x - z) - [(2x - 3y + 7z) + (4z - 5x)] = ?$

- (a)  $3x + 3y - 3z$  (b)  $4x + 7y$   
 (c)  $1x + 12y - 12z$  (d)  $15x + 3y - 12z$
121.  $6(x^3 - 2x^2 + 3x) - (x^3 + 2x - 3) = ?$   
 (a)  $5x^3 - 12x^2 + 16x + 3$  (b)  $5x^3 - 12x^2 + 16x - 3$   
 (c)  $5x^3 + 12x^2 + 16x - 3$  (d)  $5x^3 + 12x^2 + 16x + 3$
122.  $x(2x-5) + 6(x^2-4) + 18 = ?$   
 (a)  $8x^2 - 5x + 6$  (b)  $8x^2 + 5x + 6$   
 (c)  $8x^2 - 5x - 6$  (d)  $8x^2 + 5x - 6$
123.  $3x(x-6) + x^2 + 6x - 9 + 24 - x^3 = ?$   
 (a)  $15 + 12x + 4x^2 + x^3$  (b)  $15 - 12x + 4x^2 + x^3$   
 (c)  $15 + 12x + 4x^2 - x^3$  (d)  $15 - 12x + 4x^2 - x^3$
124.  $3(3x-2) + x(4x/2) + 15 - 12 = ?$   
 (a)  $2x^2 + 9x - 3$  (b)  $2x^2 + 9x + 6$   
 (c)  $2x^2 + 9x + 3$  (d)  $2x^2 + 6x - 3$
125.  $16x^2 + 4y^2 + 25z^2 - 16xy + 20yz - 40zx = ?$   
 (a)  $(4x - 2y + 5z)^2$  (b)  $(4x + 2y + 5z)^2$   
 (c)  $(4x - 2y - 5z)^2$  (d)  $(4x + 2y - 5z)^2$
126.  $(5a + 6b + 8c)^2 = ?$   
 (a)  $25a^2 + 36b^2 + 64c^2 + 64ab + 96bc + 80ac$   
 (b)  $25a^2 + 36b^2 + 64c^2 + 60ab + 91bc + 80ac$   
 (c)  $25a^2 + 36b^2 + 64c^2 + 60ab + 96bc + 80ac$   
 (d)  $25a^2 + 36b^2 + 64c^2 + 60ab + 96bc + 90ac$
127.  $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} = 11$  and  $\frac{b}{a} + \frac{c}{b} + \frac{a}{c} = 8$  then find  $\frac{a^2}{b^2} + \frac{b^2}{c^2} + \frac{c^2}{a^2} = ?$   
 (a) 105 (b) 19 (c) 137 (d) 75
128.  $2^x - 2^{x-1} = 8$  then find  $2x^2 + 4x + 3 = ?$   
 (a) 41 (b) 20 (c) 21 (d) 51
129.  $3x - y = 5$  then find  $8^x \div 2^y = ?$   
 (a) 32 (b) 256 (c) 64 (d) 16
130. What will be the remainder when  $27x^3 - 9x^2 + 3x - 8$  is divided by  $3x + 2$ ?  
 $27x^3 - 9x^2 + 3x - 8$  ను  $3x + 2$  భాగించిన వచ్చు సేపుం?  
 (a) -22 (b) +22 (c) +16 (d) -16
131. If  $2x^m + x^3 - 3x^2 - 26$  is divided by  $x-2$ , the remainder 994 is left, find the value of 'm'?  
 $2x^m + x^3 - 3x^2 - 26$  ను  $x-2$  చే భాగించిన వచ్చు సేపుం 994 అయిన  $m$  విలువ ఎంత?  
 (a) 10 (b) 9 (c) 11 (d) 8

132. On dividing  $(2x^2 + ax + b)$  by  $(x-3)$ , then remainder is 31 and on dividing  $(x^2 + bx + a)$  by  $(x-3)$ , the remainder is 24 then the value of  $a + b$  will be equal to?  
 $(2x^2 + ax + b)$  ను  $(x-3)$  చే భాగించిన వచ్చు సేపుం 31 మరియు  $(x^2 + bx + a)$  ను  $(x-3)$  ను చే భాగించిన వచ్చు సేపుం 24. అయిన  $a + b$  విలువ ఎంత?  
 (a) -7 (b) 23 (c) -23 (d) 7
133. If the value for  $k$  for which  $x^2 + 5kx + k^2 + 5$ , is completely divisible by  $x+2$  but not divisible by  $x+3$ ?  
 $k$  యొక్క ఏ విలువ వద్ద  $x^2 + 5kx + k^2 + 5$  అను వర్గ సమాసం  $x+2$  చే నిశ్చేషముగా భాగింపబడి  $x+3$  చే భాగింపబడదు?  
 (a) neither 1 nor 9 (b) both 1 and 9  
 (c) 1 (d) 9
134.  $(x - y)(x + y) + (y - z)(y + z) + (z - x)(z + x) = ?$   
 (a)  $x^2 + y^2 + z^2$  (b)  $x + y + z$   
 (c) 0 (d)  $xy + yz + zx$
135.  $\frac{p}{b-c} = \frac{q}{c-a} = \frac{r}{a-b}$  then find  $p + q + r = ?$   
 (a) -1 (b) 1 (c) 2 (d) 0
136.  $a + b = 1$  then find  $a^4 + b^4 - a^3 - b^3 - 2a^2b^2 + ab = ?$   
 (a) 1 (b) 2 (c) 4 (d) 0
137.  $xy + yz + zx = 1$  then find  $\frac{1+yz}{(x+y)(y+z)} = ?$   
 (a)  $1/2$  (b) 1 (c)  $1/4$  (d) 0
138.  $x + y = 2z$  then find  $\frac{y}{y-z} + \frac{x}{x-z} = ?$   
 (a) 0 (b) 1 (c) 2 (d) -2
139.  $a + b + c = 2s$  then find  $\frac{(s-a)^2 + (s-b)^2 + (s-c)^2 + s^2}{a^2 + b^2 + c^2} = ?$   
 (a) 1 (b) 0 (c) 7 (d) 3
140.  $\sqrt{a^2 + b^2 + ab} + \sqrt{a^2 + b^2 - ab} = 1$  then find  $\frac{(1-a^2)(1-b^2)}{2-a^2-b^2+a^2b^2} = ?$   
 (a)  $1/4$  (b)  $3/7$  (c)  $5/4$  (d)  $3/4$
141.  $\sqrt{(1-p^2)(1-q^2)} = \frac{\sqrt{3}}{2}$  then find  $\sqrt{2p^2 + 2q^2 + 2pq} + \sqrt{2p^2 + 2q^2 - 2pq} = ?$   
 (a) 1 (b) 0 (c)  $1/2$  (d)  $\sqrt{2}$
142.  $a + b + c = 0$  then find  $\frac{a^2 + b^2 + c^2}{a^2 - bc} = ?$   
 (a) 0 (b) 1 (c) 2 (d) 3
143.  $a + b + c = 0$  then find  $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = ?$   
 (a) -1 (b) 3 (c) 0 (d) 1
144.  $a + b + c = 0$  then find  $\frac{a^2}{a^2 - bc} + \frac{b^2}{b^2 - ca} + \frac{c^2}{c^2 - ab} = ?$   
 (a) 2 (b) 1 (c) -2 (d) -1