SSC CGL 2017: Quantitative Aptitude

Chapter 1: Algebra

(1) If $(x/y)^{a-4} = (y/x)^{2a-5}$, then what is the relation between x and y?
यदि $(x/y)^{a-4} = (y/x)^{2a-5}$, तो x तथा y के बीच क्या संबंध है?
SCCGL2017-10AUG-S1 : 61
(a) x > y (b) x < y
(c) x = y (d) Can not be Determined

(2)
If $x+\frac{1}{x}=3$, then what is the value of $\frac{x^4+5x^3+3x^2+5x+1}{x^4+1}$?

यदि $x+\frac{1}{x}=3$, तो $\frac{x^4+5x^3+3x^2+5x+1}{x^4+1}$ का मान क्या है?

SCCGL2017-10AUG-S1 : 62
(a) 25/7 (b) 4 (c) 31/7 (d) 33/7

(3) If $3a - (3/a) - 3 = 0$, then what is the value of $a^3 - (1/a)^3 + 2$?
यदि $3a - (3/a) - 3 = 0$, तो $a^3 - (1/a)^3 + 2$ का मान क्या है?
SCCGL2017-10AUG-S1 : 63
(a) 0 (b)2 (c)4 (d) 6

(4)
If $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}}+\frac{x-\sqrt{x^2-1}}{x+\sqrt{x^2-1}}=194$, then what is the value of x?

यदि $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}}+\frac{x-\sqrt{x^2-1}}{x+\sqrt{x^2-1}}=194$, तो x का मान क्या है?

SCCGL2017-10AUG-S1 : 64
(a) 7/2 (b) 4 (c) 7 (d) 14

(5) If A/3 = B/2 = C/5, then what is the value of ratio $(C + A)^2 : (A + B)^2 : (B + C)^2$?
यदि A/3 = B/2 = C/5, तो $(C + A)^2 : (A + B)^2 : (B + C)^2$ के अनुपात का मान क्या होगा?
SCCGL2017-08AUG-S2 : 55
(a) 9 : 4 : 25 (b) 25 : 4 : 9
(c) 64 : 25 : 49 (d) 49 : 25 : 64

(6) If $(x^2/yz) + (y^2/zx) + (z^2/xy) = 3$, then what is the value of $(x + y + z)^3$?
यदि $(x^2/yz) + (y^2/zx) + (z^2/xy) = 3$, तो $(x + y + z)^3$ का मान क्या होगा?
SCCGL2017-08AUG-S2 : 61
(a) 0 (b) 1 (c) 2 (d) 3

(7) If $x^{1/4} + x^{-1/4} = 2$, then what is the value of $x^{81} + (1/x)^{81}$
यदि $x^{1/4} + x^{-1/4} = 2$, तो $x^{81} + (1/x)^{81}$ का मान क्या होगा -
SCCGL2017-08AUG-S2 : 62
(a) – 2 (b) 0 (c) 1 (d) 2

(8) If $a(a + b + c) = 45$, $b(a + b + c) = 75$ and $c(a + b + c) = 105$, then what is the value of $(a^2 + b^2 + c^2)$?
यदि $a(a + b + c) = 45$, $b(a + b + c) = 75$ तथा $c(a + b + c) = 105$, तो $(a^2 + b^2 + c^2)$ का मान क्या होगा?
SCCGL2017-08AUG-S2 : 63
(a) 75 (b) 83 (c) 217 (d) 225

(9) If $x^2 + 1/x^2 = 1$, then what is the value of $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$?
यदि $x^2 + 1/x^2 = 1$, तो $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$ का मान क्या होगा?
SCCGL2017-08AUG-S2 : 64
(a) – 9 (b) 0 (c) 1 (d) 9

(10) For what value of k, the expression $x^6 – 18x^3 + k$ will be a perfect square?
k के किस मान के लिए व्यंजक $x^6 – 18x^3 + k$ एक पूर्ण वर्ग होगा?
SCCGL2017-11AUG-S3 : 61
(a) – 9 (b) – 81 (c) + 9 (d) + 81

(11)
If $\frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}}=3$, then what is the value of x?

यदि $\frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}}=3$ है, तो x का मान क्या है?

SCCGL2017-11AUG-S3 : 62
(a) 5/2 (b) 25/3 (c) 4 (d) 3

(12) If $(x + y + z) = 12$, $xy + yz + zx = 44$ and $xyz = 48$, then what is the value of $x^2 + y^2 + z^2$?
यदि $(x + y + z) = 12$, $xy + yz + zx = 44$ तथा $xyz = 48$ है, तो $x^2 + y^2 + z^2$ का मान क्या है?
SCCGL2017-11AUG-S3 : 63
(a) 104 (b) 144 (c) 196 (d) 288

(13)
If $x=\frac{4\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$, then what is the value of $\frac{x+2\sqrt{a}}{x-2\sqrt{a}}+\frac{x+2\sqrt{b}}{x-2\sqrt{b}}$ (when $a \neq b$)?

यदि $x=\frac{4\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$ हो, तो $\frac{x+2\sqrt{a}}{x-2\sqrt{a}}+\frac{x+2\sqrt{b}}{x-2\sqrt{b}}$ का मान क्या है (जब $a \neq b$ हो)?

SCCGL2017-11AUG-S3 : 64
(a) 0 (b) 2
(c) 4 (d) $(\sqrt{a} + \sqrt{b})/(\sqrt{a} – \sqrt{b})$

(14) If $5/2 - (6/5)(x - 15/2) = -x/5$, then what is the value of x?
यदि $5/2 - (6/5)(x - 15/2) = -x/5$, तो x का मान क्या है?
SCCGL2017-21AUG-S3 : 61
(a) -23/2 (b) 13/2 (c) -13/2 (d) 23/2

(15) If $a - b = 2$ and $ab = 24$, then what is the value of $a^3 - b^3$?
यदि $a - b = 2$ और $ab = 24$ है, $a^3 - b^3$ का मान क्या है?
SCCGL2017-21AUG-S3 : 62
(a) 280 (b) 124 (c) 140 (d) 152

(16) If $-3[1-(x/2)] + 5x/3 = 1/6$, then what is the value of x?
यदि $-3 [1-(x/2)] + 5x/3 = 1/6$, तो x का मान क्या है?
SCCGL2017-22AUG-S2 : 61
(a) 2 (b) -1 (c) 1 (d) -2

(17) If $a + b = 3$ and $ab = -4$, then what is the value of $a^3 + b^3$?
यदि $a + b = 3$ और $ab = -4$, फिर $a^3 + b^3$ का मान क्या है?
SCCGL2017-22AUG-S2 : 62
(a) 36 (b) 63 (c) 12 (d) -15

(18) What is the difference of the cube and square of the common root of $(x^2 – 8x + 15) = 0$ and $(y^2 + 2y – 35) = 0$?
$(x^2 – 8x + 15) = 0$ तथा $(y^2 + 2y – 35) = 0$ के सामान्य शून्यक के घन तथा वर्ग के बीच का अंतर क्या होगा?
SCCGL2017-05AUG-S3 : 61
(a) 76 (b) 100 (c) 294 (d) 318

(19)
If $\left(x-\frac{1}{3}\right)^2+(y-4)^2=0$, then what is the value of $\frac{y+x}{y-x}$?

यदि $\left(x-\frac{1}{3}\right)^2+(y-4)^2=0$ हो, तो $\frac{y+x}{y-x}$ का मान क्या है?

SCCGL2017-05AUG-S3 : 62
(a) 11/13 (b) 13/11 (c) 16/9 (d) 9/16

(20) What is the difference of the factors of the expression $x^2 + (1/x^2) – 6$?
व्यंजक $x^2 + (1/x^2) – 6$ के गुणनखंडों का अंतर क्या है?
SCCGL2017-05AUG-S3 : 63
(a) 0 (b) 1 (c) 2 (d) 4

(21) If $x + (1/x) = \sqrt{13}$, then what is the value of $x^5 – (1/x^5)$?
यदि $x + (1/x) = \sqrt{13}$ हो, तो $x^5 – (1/x^5)$ का मान क्या है?
SCCGL2017-05AUG-S3 : 64
(a) 169 (b)$169\sqrt{3}$ (c) 393 (d) 507

(22) If $x^3 + 2x^2 – 5x + k$ is divisible by $x + 1$, then what is the value of k?
यदि $x^3 + 2x^2 – 5x + k$, $x + 1$ से विभाजित होता है, तो k का मान क्या है?
SCCGL2017-10AUG-S2 : 61
(a) – 6 (b) – 1 (c) 0 (d) 6

(23) If $3x + [1/(5x)] = 7$, then what is the value of $5x/(15x^2 + 15x + 1)$?
यदि $3x + [1/(5x)] = 7$, तो $5x/(15x^2 + 15x + 1)$ का मान क्या होगा?
SCCGL2017-10AUG-S2 : 62
(a) 1/5 (b) 1/10 (c) 2/5 (d) 10

(24) If $x + [1/(4x)] = 5/2$, then what is the value of $(64x^6 + 1)/8x^3$?
यदि $x + [1/(4x)] = 5/2$, तो $(64x^6 + 1)/8x^3$ का मान क्या होगा?
SCCGL2017-10AUG-S2 : 63
(a) 110 (b) 115 (c) 125 (d) 140

(25) If $x^2 + x = 19$, then what is the value of $(x + 5)^2 + [1/(x + 5)^2]$?
यदि $x^2 + x = 19$, तो $(x + 5)^2 + [1/(x + 5)^2]$ का मान क्या होगा?
SCCGL2017-10AUG-S2 : 64
(a) 77 (b) 79 (c) 81 (d) 83

(26) If $7x - [3(2x-3)]/2 = 1/2$, then what is the value of x?
यदि $7x - [3(2x-3)]/2 = 1/2$ है, तो x का मान क्या होगा?
SCCGL2017-17AUG-S1 : 61
(a) -1 (b) 1 (c) 3 (d) -3

(27) If $a + b = 4$ and $ab = 3$, then what is the value of $a^3 + b^3$?
यदि $a + b = 4$ और $ab = 3$ है, तो $a^3 + b^3$ का मान क्या होगा?
SCCGL2017-17AUG-S1 : 62
(a) 21 (b) 17 (c) 28 (d) 31

(28) If $(x – 2)$ and $(x + 3)$ are the factors of the equation $x^2 + k_1x + k_2 = 0$, then what are the values of k_1 and k_2?
यदि समीकरण $x^2 + k_1x + k_2 = 0$ के गुणनखण्ड $(x – 2)$ तथा $(x + 3)$ हैं, तो k_1 तथा k_2 का मान क्या है?
SCCGL2017-09AUG-S1 : 61
(a) $k_1 = 6, k_2 = – 1$ (b) $k_1 = 1, k_2 = – 6$
(c) $k_1 = 1, k_2 = 6$ (d) $k_1 = – 6, k_2 = 1$

(29) If $(x – y) = 7$, then what is the value of $(x – 15)^3 – (y – 8)^3$?
अगर $(x – y) = 7$ हो, तो $(x – 15)^3 – (y – 8)^3$ का मान क्या है?
SCCGL2017-09AUG-S1 : 62
(a) 0 (b) 343 (c) 392 (d) 2863

(30) If $x – y – \sqrt{18} = –1$ and $x + y – 3\sqrt{2} = 1$, then what is the value of $12xy(x^2 – y^2)$?
यदि $x – y – \sqrt{18} = –1$ तथा $x + y – 3\sqrt{2} = 1$ हो, तो $12xy(x^2 – y^2)$ का मान क्या है?
SCCGL2017-09AUG-S1 : 63
(a) 0 (b) 1 (c) $512\sqrt{2}$ (d) $612\sqrt{2}$

(31) If $p/q = r/s = t/u = \sqrt{5}$, then what is the value of $[(3p^2 + 4r^2 + 5t^2)/(3q^2 + 4s^2 + 5u^2)]$?
यदि $p/q = r/s = t/u = \sqrt{5}$ हो, तो $[(3p^2 + 4r^2 + 5t^2)/(3q^2 + 4s^2 + 5u^2)]$ का मान क्या है?
SCCGL2017-09AUG-S1 : 64
(a) 1⁄5 (b) 5 (c) 25 (d) 60

(32) If $(1/x) + (1/y) + (1/z) = 0$ and $x + y + z = 9$, then what is the value of $x^3 + y^3 + z^3 – 3xyz$?
यदि $(1/x) + (1/y) + (1/z) = 0$ तथा $x + y + z = 9$, तो $x^3 + y^3 + z^3 – 3xyz$ का मान क्या होगा?
SCCGL2017-09AUG-S2 : 61
(a) 81 (b) 361 (c) 729 (d) 6561

(33) If $x^4 + (1/x^4) = 34$, then what is the value of $x^3 – (1/x^3)$?
यदि $x^4 + (1/x^4) = 34$, तो $x^3 – (1/x^3)$ का मान क्या होगा?
SCCGL2017-09AUG-S2 : 62
(a) 0 (b) 6 (c) 8 (d) 14

(34) If $x = 1 – y$ and $x^2 = 2 – y^2$, then what is the value of xy?
यदि $x = 1 – y$ तथा $x^2 = 2 – y^2$, तो xy का मान क्या होगा?
SCCGL2017-09AUG-S2 : 63
(a) 1 (b) 2 (c) –1/2 (d) –1

(35) If $x + [1/(x + 7)] = 0$, then what is the value of $x – [1/(x + 7)]$?
यदि $x + [1/(x + 7)] = 0$, तो $x – [1/(x + 7)]$ का मान क्या होगा?
SCCGL2017-09AUG-S2 : 64
(a) $3\sqrt{5}$ (b) $3\sqrt{5} – 7$ (c) $3\sqrt{5} + 7$ (d) 8

(36) If α and β are roots of the equation $3x^2 – 13x + 14 = 0$, then what is the value of $(α/β) + (β/α)$?
यदि α तथा β व्यंजक $3x^2 – 13x + 14 = 0$ के शून्यक हैं, तो $(α/β) + (β/α)$ का मान क्या है?
SCCGL2017-11AUG-S1 : 61
(a) 65/28 (b) 53/14 (c) 9 (d) 85/42

(37) If $a + b + c = 9$ and $ab + bc + ca = 18$, then what is the value of $a^3 + b^3 + c^3 – 3abc$?
यदि $a + b + c = 9$ तथा $ab + bc + ca = 18$, तो $a^3 + b^3 + c^3 – 3abc$ का मान क्या है?
SCCGL2017-11AUG-S1 : 62
(a) 189 (b) 243 (c) 361 (d) 486

(38) If $(x/y) + (y/x) = 1$, then what is the value of $x^3 + y^3$?
यदि $(x/y) + (y/x) = 1$, तो $x^3 + y^3$ का मान क्या है?
SCCGL2017-11AUG-S1 : 63
(a) – 1 (b) 0 (c) 1 (d) 3

(39) If $5^x = 30^{-y} = 6^z$, then what is the value of $(xy + yz + zx)/xyz$?
यदि $5^x = 30^{-y} = 6^z$, तो $(xy + yz + zx)/xyz$ का मान क्या है?
SCCGL2017-11AUG-S1 : 64
(a) 0 (b) 1 (c) 2 (d) 3

(40) If $x(2x + 3) = 90$ and $7y^{-1/2} + 2y^{-1/2} = y^{1/2}$ (x and y are positive numbers), then what is the value of $x^2 + y^2$?
यदि $x(2x + 3) = 90$ तथा $7y^{-1/2} + 2y^{-1/2} = y^{1/2}$ (x तथा y धनात्मक संख्या है), तो $x^2 + y^2$ का मान क्या होगा?
1-12AUG-S1 : 61
(a) 45 (b) 109 (c) 117 (d) 126

(41) If $x/y = 4/9$, then what is the value of $(7x^2 – 19xy + 11y^2)/y^2$?
यदि $x/y = 4/9$, तो $(7x^2 – 19xy + 11y^2)/y^2$ का मान क्या होगा?
SCCGL2017-12AUG-S1 : 62
(a) 59/81 (b) 100/27 (c) 319/81 (d) 913/81

(42) If $x – 3 + [1/(x – 3)] = 4$, what is the value of $(x – 3)^3 + [1/(x – 3)^3]$?
यदि $x – 3 + [1/(x – 3)] = 4$, तो $(x – 3)^3 + [1/(x – 3)^3]$ का मान क्या होगा?
SCCGL2017-12AUG-S1 : 63
(a) 14 (b) 18 (c) 52 (d) 76

(43) If $x^2 + y^2 + z^2 = xy + yz + zx$, then what is the value of $(7x + 3y – 5z)/5x$?
यदि $x^2 + y^2 + z^2 = xy + yz + zx$, तो $(7x + 3y – 5z)/5x$ का मान क्या होगा?
SCCGL2017-12AUG-S1 : 64
(a) 0 (b) 1 (c) 5 (d) 33/5

(44) If $a + b + c = 11$ and $ab + bc + ca = 17$, then what is the value of $a^3 + b^3 + c^3 – 3abc$?
यदि $a + b + c = 11$ तथा $ab + bc + ca = 17$ है, तो $a^3 + b^3 + c^3 – 3abc$ का मान क्या होगा?
SCCGL2017-12AUG-S2 : 61
(a) 121 (b) 168 (c) 300 (d) 770

(45)

If $x^4+\frac{1}{x^4}=62$, than what is the value of $x^6+\frac{1}{x^6}$?

यदि $x^4+\frac{1}{x^4}=62$, तो $x^6+\frac{1}{x^6}$ का मान क्या है ?

SCCGL2017-12AUG-S2 : 62

(a) 144 (b) 288 (c) 396 (d) 488

(46)

If x+y=4, than what is the value of $\frac{2}{x-2}+\frac{2}{y-2}$?

यदि If x+y=4 , तो $\frac{2}{x-2}+\frac{2}{y-2}$ का मान क्या है ?

SCCGL2017-12AUG-S2 : 63

(a) –1 (b) 0 (c) 4 (d) 16

(47) If (x/5) + (5/x) = – 2, then what is the value of x^3?

यदि (x/5) + (5/x) = – 2 है, तो x^3 का मान क्या होगा?

SCCGL2017-12AUG-S2 : 64

(a) –125 (b) 5 (c) 1/125 (d) 625

(48)

What is the value of $\frac{1+x}{1-x^4} \div \frac{x^2}{1+x^2} \times x(1-x)$?

$\frac{1+x}{1-x^4} \div \frac{x^2}{1+x^2} \times x(1-x)$ का मान क्या है?

SCCGL2017-10AUG-S3 : 61

(a) 1/x (b) $x^2 – 1$ (c) x + 1 (d) x

(49)

If $x + {}^1/_x = 17$, then what is the value of $\frac{x^4+\frac{1}{x^2}}{x^2-3x+1}$?

यदि $x + {}^1/_x = 17$, तो $\frac{x^4+\frac{1}{x^2}}{x^2-3x+1}$ का मान क्या है?

SCCGL2017-10AUG-S3 : 62

(a) 2431/7 (b) 3375/7

(c) 3375/14 (d) 3985/9

(50)

What is the value of x in the equation

$\sqrt{\frac{1+x}{x}}-\sqrt{\frac{x}{1+x}}=\frac{1}{\sqrt{6}}$?

समीकरण $\sqrt{\frac{1+x}{x}}-\sqrt{\frac{x}{1+x}}=\frac{1}{\sqrt{6}}$ में x का क्या मान था?

SCCGL2017-10AUG-S3 : 63

(a) -2 (b) 3 (c) 2 (d) None of these

(51)

If $2\left[x^2+\frac{1}{x^2}\right]-2\left[x-\frac{1}{x}\right]-8=0$, then what are the two value of $x-\frac{1}{x}$?

यदि $2\left[x^2+\frac{1}{x^2}\right]-2\left[x-\frac{1}{x}\right]-8=0$, तो $x-\frac{1}{x}$ के दो मान किया है?

SCCGL2017-10AUG-S3 : 64

(a) –1 or 2 (b) 1 or –2

(c) –1 or –2 (d) 1 or 2

(52) If x + (1/x) = 2, then what is the value of $x^{21} + (1/x^{1331})$?

यदि x + (1/x) = 2, तो $x^{21} + (1/x^{1331})$ का मान क्या होगा?

SCCGL2017-12AUG-S3 : 61

(a) 0 (b) 1 (c) 2 (d) 4

(53) If $x^3 – y^3 = 81$ and x – y = 3, then what is the value of $x^2 + y^2$?

यदि $x^3 – y^3 = 81$ तथा x – y = 3, तो $x^2 + y^2$ का मान क्या होगा?

SCCGL2017-12AUG-S3 : 62

(a) 18 (b) 21 (c) 27 (d) 36

(54)

If $\sqrt{5}x-6+\sqrt{5x+6}=6$,than what is the value of x?

यदि $\sqrt{5}x-6+\sqrt{5x+6}=6$, तो x का मान क्या है ?

SCCGL2017-12AUG-S3 : 63

(a) –4 (b) 0 (c) 2 (d) 4

(55)

If $2x+\frac{1}{2x}=2$, then what is the velue of $\sqrt{2\left(\frac{1}{X}\right)^4+\left(\frac{1}{X}\right)^5}$?

यदि $2x+\frac{1}{2x}=2$, तो $\sqrt{2\left(\frac{1}{X}\right)^4+\left(\frac{1}{X}\right)^5}$ का मान क्या है ?

SCCGL2017-12AUG-S3 : 64

(a) 1 (b) 2 (c) 4 (d) 8

(56)

What is the value of $\frac{1}{x^{(p-q)}+1}+\frac{1}{x^{(q-p)}+1}$?

$\frac{1}{x^{(p-q)}+1}+\frac{1}{x^{(q-p)}+1}$ का मान क्या है?

SCCGL2017-11AUG-S2 : 61

(a) 0 (b) 1 (c) x(p-q) (d) x(p+q)

(57)

If $x = 8 + 2\sqrt{15}$, then what is the value of $\sqrt{x}+\frac{1}{\sqrt{x}}$?

यदि $x = 8 + 2\sqrt{15}$, तो $\sqrt{x}+\frac{1}{\sqrt{x}}$ का मान क्या है?

SCCGL2017-11AUG-S2 : 62

(a) $2\sqrt{5}$ (b) $2\sqrt{3}$(c) $(3\sqrt{5} + \sqrt{3})/2$ (d) $(3\sqrt{3} – \sqrt{5})/2$

(58)

What is the value of $\frac{1+a}{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}-\frac{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}{1+a}+a^{\frac{-1}{2}}$?

$\frac{1+a}{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}-\frac{a^{\frac{1}{2}}+a^{\frac{-1}{2}}}{1+a}+a^{\frac{-1}{2}}$ का मान क्या है?

SCCGL2017-11AUG-S2 : 63

(a) $\sqrt{a}$ (b) $1/\sqrt{a}$ (c) $\sqrt{a} + 1$ (d) $\sqrt{a} – 1$

(59)

If $\frac{p}{q}=\frac{x+3}{x-3}$, then what is the value of $\frac{p^2+q^2}{p^2-q^2}$?

यदि $\frac{p}{q}=\frac{x+3}{x-3}$, तो $\frac{p^2+q^2}{p^2-q^2}$ का मान क्या है?

(a) $\frac{x^2+9}{3x}$ (b) $\frac{x^2+18}{6x}$ (c) $\frac{x^2+18}{3x}$

SCCGL2017-11AUG-S2 : 64

(a) A (b) B (c) C (d) D

(60) If 5x - (1/2)(2x -7) = 5.5, then what is the value of x?

यदि 5x – (1/2)(2x – 7) =5.5 है तो x का मान क्या है?

SCCGL2017-17AUG-S2 : 61

(a) 3/2 (b) ½ (c) -1/2 (d) -3/2

(61) If a + b = 4 and ab = -5, then what is the value of $a^3 + b^3$?
यदि a + b = 4 और ab = -5 तो $a^3 + b^3$ का मान क्या है?

SCCGL2017-17AUG-S2 : 62

(a) 34 (b) 36 (c) 124 (d) 126

(62) If $4^{(x+y)} = 256$ and $(256)^{(x-y)} = 4$, then what is the value of x and y?
यदि $4^{(x+y)} = 256$ तथा $(256)^{(x-y)} = 4$, तो x तथा y का मान क्या होगा?

SCCGL2017-09AUG-S3 : 61

(a) 17/8, 15/8 (b) 17/4, 15/4
(c) 9/17, 15/17 (d) 8/17, 8/15

(63) If the expression $px^3 – qx^2 – 7x – 6$ is completely divisible by $x^2 – x – 6$, then what is the value of p and q respectively?
यदि व्यंजक $px^3 – qx^2 – 7x – 6$, $(x^2 – x – 6)$ से पूर्णतः विभाजित होता है, तो क्रमशः p तथा q का मान क्या है?

SCCGL2017-09AUG-S3 : 62

(a) 0, 1 (b) 1, 0 (c) 2, (d) 1, 2

(64) If the expression $px^3 – 2x^2 – qx + 18$ is completely divisible by $(x^2 – 9)$, then what is the ratio between p and q respectively?
यदि व्यंजक $px^3 – 2x^2 – qx + 18$, $(x^2 – 9)$ से पूर्णतः विभाजित है, तो क्रमशः p तथा q के बीच का अनुपात क्या होगा?

SCCGL2017-09AUG-S3 : 63

(a) 1:9 (b) 1:3 (c) 3:1 (d) 9:1

(65)

If $x+\frac{1}{x}=5$, than what is the value of $x^5+\frac{1}{x^5}$?

यदि If $x+\frac{1}{x}=5$, तो $x^5+\frac{1}{x^5}$ का मान क्या है ?

SCCGL2017-09AUG-S3 : 64

(a) 1875 (b) 2525 (c) 2530 (d) 3120

(66) If x + y = 5, $x^3 + y^3 = 35$, then what is the positive difference between x and y?
यदि x + y = 5, $x^3 + y^3 = 35$, तो x तथा y का धनात्मक अंतर कितना है?

SCCGL2017-16AUG-S3 : 61

(a) 0 (b) (c) 5 (d) 6

(67)

If $x=\sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$, than what is the value of x^2+x-9?

यदि If $x=\sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$, तो x^2+x-9 का मान क्या है ?

SCCGL2017-16AUG-S3 : 62

(a) 0 (b) 3√ (c) 3√3 (d) 5√3

(68)

If $x+y+z=0$, than what is the value of $\frac{x^2}{3z}+\frac{y^3}{3xz}+\frac{z^2}{3x}$?

यदि If $x+y+z=0$, तो $\frac{x^2}{3z}+\frac{y^3}{3xz}+\frac{z^2}{3x}$ का मान क्या है ?

SCCGL2017-16AUG-S3 : 63

(a) 0 (b) xz (c) y (d) 3y

(69)

If $x-\frac{1}{x}=1$, than what is the value of?

$$\frac{1}{X}\left(\frac{1}{X-1}-\frac{1}{X+1}+\frac{1}{X^2+1}-\frac{1}{X^2-1}\right)$$

यदि $x-\frac{1}{x}=1$, तो $\frac{1}{x}\left(\frac{1}{x-1}-\frac{1}{x+1}+\frac{1}{x^2+1}-\frac{1}{x^2-1}\right)$ का मान क्या है ?

SCCGL2017-16AUG-S3 : 64

(a) ±√5 (b) 2/5 (c) ±2/√5 (d) ±√5/2

(70) If x/3 - [5(7x/5 - 4/3]/2 = -x/6, then what is the value of x?
यदि x/3 - [5(7x/5 - 4/3]/2 = -x/6 तो x का मान क्या है?

SCCGL2017-17AUG-S3 : 61

(a) 10/9 (b) -10/9 (c) -9/10 (d) 9/10

(71) If $a^3 + b^3 = 19$ and a + b = 1, then what is the value of ab?
यदि $a^3 + b^3 = 19$ और a + b = 1 है, तो ab का मान क्या है?

SCCGL2017-17AUG-S3 : 62

(a) 5 (b) -6 (c) 7 (d) -9

(72) If 17/3 + [3(2x - 5/3)]/2 = 1/6, then what is the value of x?
यदि 17/3 + [3(2x - 5/3)]/2 = 1/6 है, तो x का मान क्या है?

SCCGL2017-18AUG-S2 : 61

(a) 1 (b) 3 (c) -3 (d) -1

(73) If a + b = 5 and ab = 6, then what is the value of $a^3 + b^3$?
यदि a + b = 5 और ab = 6 है, तो $a^3 + b^3$ का मान क्या है?

SCCGL2017-18AUG-S2 : 62

(a) 32 (b) 38 (c) 35 (d) 34

(74) The sum of a fraction and 3 times its reciprocal is 37/10. What is the fraction?
एक भिन्न और उसके व्युत्क्रम के 3 गुण का योग 37/10 है। वह भिन्न क्या है?

SCCGL2017-18AUG-S2 : 63

(a) 5/2 (b) 2/5 (c) 5/4 (d) 4/5

(75) If $^{5x}/_2 - [7(6x - {}^3/_2)]/4 = {}^5/_8$, then what is the value of x?
यदि $^{5x}/_2 - [7(6x - {}^3/_2)]/4 = {}^5/_8$, तो x का मान क्या होगा?

SCCGL2017-18AUG-S3 : 61

(a) ¼ (b) -1/4 (c) 4 (d) -4

(76) If $a^3 - b^3 = 91$ and a - b = 1, then what is the value of ab?
यदि $a^3 - b^3 = 91$ और a - b = 1 है, तो ab का मान क्या होगा?

SCCGL2017-18AUG-S3 : 62

(a) 27 (b) 6 (c) 9 (d) 30

(77) A fraction is greater than twice its reciprocal by 7/15. What is the fraction?
एक भिन्न अपने व्युत्क्रम के दोगुने से 7/15 से अधिक है। वह भिन्न क्या है?

SCCGL2017-18AUG-S3 : 63

(a) 3/5 (b) 5/3 (c) ¾ (d) 4/3

(78) If [7(5x/3 - 3/2)]/2 + 3/2 = 1/4, then what is the value of x?
यदि [7(5x/3 - 3/2)]/2 + 3/2 = 1/4 है, तो x का मान क्या है?

SCCGL2017-18AUG-S1 : 61

(a) 35/24 (b) 24/35 (c) -24/35 (d) -35/24

(79) If $a^3 + b^3 = 19$ and ab = -6 , then what is the value of a + b?
यदि $a^3 + b^3 = 19$ और ab = -6 हो, तो a + b का मान क्या है?

SCCGL2017-18AUG-S1 : 62

(a) 5 (b) 7 (c) 1 (d) -5

(80) If $[4(^{2x}/_5 - {}^3/_2)]/_3 + {}^7/_5 = {}^{37}/_5$, then what is the value of x?
यदि $[4(^{2x}/_5 - {}^3/_2)]/_3 + {}^7/_5 = {}^{37}/_5$ है, तो x का मान ज्ञात कीजिए।
SCCGL2017-19AUG-S1 : 61
(a)-15 (b) 7/5 (c) 15 (d) -7/5

(81) If a - b = 4 and ab = -3, then what is the value of $a^3 - b^3$?
यदि a - b = 4 और ab = -3 है, तसे $a^3 - b^3$ का मान क्या है?
SCCGL2017-19AUG-S1 : 62
(a) 21 (b) 28 (c) 23 (d) -20

(82) When $[x + (1/x)] = 5$, then what is the value of $[x – (1/x)]$?
जब $[x + (1/x)] = 5$ है, तो $[x – (1/x)]$ का मान क्या है?
SCCGL2017-16AUG-S1 : 61
(a) 11 (b) ± √22 (c) 21 (d) ± √21

(83) If $x = (\sqrt{2} +1)/(\sqrt{2} – 1)$, then what is the value of $(x^5 + x^4 + x^2 + x)/x^3$?
यदि $x = (\sqrt{2} + 1) / (\sqrt{2} – 1)$ है, तो $(x^5 + x^4 + x^2 + x) / x^3$ का मान क्या है?
SCCGL2017-16AUG-S1 : 62
(a) 40 (b) 37.5 (c) 38 (d) 20√2

(84) If $x = 5 – 2\sqrt{6}$, then what is the value of $\sqrt{x} +(1/\sqrt{x})$?
यदि $x = 5 - 2\sqrt{6}$ है, तो $\sqrt{x} + (1/\sqrt{x})$ का मान क्या है?
SCCGL2017-16AUG-S1 : 63
(a) 5 (b) 2 (c) 2√3 (d) 2√2

(85) If $27^x + 27^{[x - 1/3]} = 972$, then what is the value of x?
यदि $27^x + 27^{[x - 1/3]} = 972$ है, तो x का मान क्या है?
SCCGL2017-16AUG-S1 : 64
(a) 2 (b) 3 (c) 4 (d) 5

(86) If a = 73, b = 74 and c = 75, then what is the value of $a^3 + b^3 + c^3 – 3abc$?
यदि a = 73, b = 74 तथा c = 75, तो $a^3 + b^3 + c^3 – 3abc$ का मान क्या होगा?
SCCGL2017-16AUG-S2 : 61
(a) 365 (b) 444 (c) 666 (d) 999

(87) If $x^2 + (1/x^2 = 31/9$ and $x > 0$, then what is the value of $x^3 + (1/x^3)$?
यदि $x^2 + (1/X^2) = 31/9$ तथा $x > 0$, तो $x^3 + (1/x^3)$ का मान क्या होगा?
SCCGL2017-16AUG-S2 : 62
(a) 70/9 (b) 154/27 (c) 349/27 (d) 349/7

(88)
What is the value of $\frac{(x^2-5x+6)}{(x^2-3x+2)} \div \frac{(x^2-7x+12)}{(x^2-5x+14)}$?
$\frac{(x^2-5x+6)}{(x^2-3x+2)} \div \frac{(x^2-7x+12)}{(x^2-5x+14)}$ का मान क्या है?
SCCGL2017-16AUG-S2 : 63
(a) 1 (b) 2
(c) (x – (b)/(x – (a) (d) (x + (c)/(x + (a)

(89) If $x – (1/x) = 3$, then what is the value of $(2x^4 + 3x^3 + 13x^2 – 3x + 2) / (3x^4 + 3)$?
यदि $x – (1/x) = 3$, तो $(2x^4 + 3x^3 + 13x^2 – 3x + 2) / (3x^4 + 3)$ का मान क्या होगा?
SCCGL2017-16AUG-S2 : 64
(a) 1/3 (b) 2/3 (c) 4/3 (d) 5/3

(90) If $8x/3 + [7(5 - 2x/3)]/2 = 1/2$, then what is the value of x?
यदि $8x/3 + [7(5 - 2x/3)]/2 = ½$ है, तसे x का मान क्या है?
SCCGL2017-19AUG-S2 : 61
(a) -17 (b) 51 (c) -51 (d) 17

(91) If a - b = -1 and ab = 6, then what is the value of $a^3 - b^3$?
यदि a - b = -1 और ab = 6 है, तो $a^3 - b^3$ का मान क्या है?
SCCGL2017-19AUG-S2 : 62
(a) 33 (b) -19 (c) 18 (d) 35

(92) The sum of a fraction and 3 times its reciprocal is 31/6. What is the fraction?
एक भिन्न उसके व्युत्क्रम के 3 गुणा का योग 31/6 है। वह भिन्न क्या है?
SCCGL2017-19AUG-S2 : 63
(a) 2/9 (b) 9/2 (c) 5/4 (d) 4/5

(93) If $x/2 - [4(15/2) - x/3]/3 = -x/18$, then what is the value of x?
यदि $x/2 - [4(15/2) - x/3]/3 = -x/18$ तो x का मान क्या है?
SCCGL2017-19AUG-S3 : 61
(a) -10 (b) 9/8 (c) 10 (d) -9/8

(94) If $a^3 + b^3 = 152$ and a + b = 8, then what is the value of ab?
यदि $a^3 + b^3 = 152$ और a + b = 8 है, तो ab का मान क्या है?
SCCGL2017-19AUG-S3 : 62
(a) 2 (b) 11 (c)-10 (d) 15

(95) A fraction is greater than its reciprocal by 9/20. What is the fraction?
एक भिन्न अपने व्युत्क्रम से 9/20 से अधिक है। वह भिन्न क्या है?
SCCGL2017-19AUG-S3 : 63
(a) 5/4 (b) 4/5 (c) ¾ (d) 4/3

(96) If 5x + 6(3-2x) = 4, then what is the value of x?
यदि 5x + 6(3-2x) = 4, तो x का मान क्या है?
SCCGL2017-20AUG-S1 : 61
(a) 1 (b) 3 (c) 2 (d) 4

(97) If a + b = 1 and ab = -6, then what is the value of $a^3 + b^3$?
यदि a + b = 1 और ab = -6, तो $a^3 + b^3$ का मान क्या है?
SCCGL2017-20AUG-S1 : 62
(a) 17 (b) 15 (c) 19 (d) 13

(98) The sum of a non-zero number and twenty times its reciprocal is 9. What is the number?
एक गैर-शून्य संख्या और इसके व्युत्क्रमानुपाती के बीस गुना का योग 9 है। तो वह संख्या क्या है?
SCCGL2017-20AUG-S1 : 63
(a) -5 (b) 3 (c) -3 (d) 5

(99) If $5/2(8x/3 - 1/2) + 13/2 = 2x/3$, then what is the value of x?
यदि $5/2(8x/3 - 1/2) + 13/2 = 2x/3$हो तो x का मान क्या है?
SCCGL2017-21AUG-S1 : 61
(a) 7/8 (b) 8/7 (c) -8/7 (d) -7/8

(100) If $a^3 + b^3 = 72$ and ab = 8 , then what is the value of a + b?
यदि $a^3 + b^3 = 72$ और ab = 8है, तो a + b का मान क्या है?
SCCGL2017-21AUG-S1 : 62
(a) 2 (b) 5 (c) 6 (d) 3

(101) Sum of four times a fraction and 7 times its reciprocal is 16. What is the fraction?

एक भिन्न का चार गुना और उसके व्युत्क्रम के 7 गुना का योग 16 है। वह भिन्न कौन – सा है?
SCCGL2017-21AUG-S1 : 63
(a) 2/7 (b) 7/2 (c) 4/7 (d) 7/4

(102) If 14/3 + (1/2)(x - 7/1) = -2x/3, then the value of x is?
यदि 14/3 + (1/2)(x - 7/1) = -2x/3 तो x का मान क्या होगा?
SCCGL2017-21AUG-S2 : 61
(a) -3 (b) 3 (c) 6 (d) -6

(103) If a + b = 10 and ab = 24, then what is the value of $a^3 + b^3$?
यदि a + b = 10 और ab = 24 है, तो $a^3 + b^3$ का मान क्या होगा?
SCCGL2017-21AUG-S2 : 62
(a) 280 (b) 152 (c) 140 (d) 72

(104) The sum of a fraction and 3 times its reciprocal is 19/4. What is the fraction?
एक भिन्न और उस भिन्न के व्युत्क्रम के 3 गुणा का योग 19/4 है। वह भिन्न क्या है?
SCCGL2017-21AUG-S2 : 63
(a) ¾ (b) 4/3 (c) 5/4 (d) 4/5

(105)
If $X=\frac{2+\sqrt{3}}{2-\sqrt{3}}$, than what is the value of $X+\frac{1}{X}$?
यदि $X=\frac{2+\sqrt{3}}{2-\sqrt{3}}$, तो $X+\frac{1}{X}$ का मान क्या है ?
SCCGL2017-05AUG-S1 : 61
(a) 14 (b) $8\sqrt{3}$ (c) 0 (d) 18

(106)
If $x=2-\sqrt{3}$, than what is the value of $\sqrt{2x}+\frac{1}{\sqrt{2x}}$?
यदि $x=2-\sqrt{3}$, तो $\sqrt{2x}+\frac{1}{\sqrt{2x}}$ का मान क्या है ?
SCCGL2017-05AUG-S1 : 62
(a) $2\sqrt{3}$ (b) $3\sqrt{3}$
(c) $(3\sqrt{3} + 1)/2$ (d) $2\sqrt{3} + 1$

(107)
If $x+\frac{1}{X}=4$, than what is the value of $X^6+\frac{1}{X^6}$?
यदि $x+\frac{1}{X}=4$, तो $X^6+\frac{1}{X^6}$ का मान क्या है ?
SCCGL2017-05AUG-S1 : 63
(a) 52 (b) 256 (c) 1026 (d) 2702

(108)
If $y=\frac{2-X}{1+X}$, than what is the value of $\frac{1}{y+1}+\frac{2y+1}{y^2-1}$?
यदि $y=\frac{2-X}{1+X}$ तो, $\frac{1}{y+1}+\frac{2y+1}{y^2-1}$ का मान क्या है ?
(a) $\frac{(1+X)(2-X)}{2X-1}$
(b) $\frac{(1-X)(2+X)}{X-1}$
(c) $\frac{(1+X)(2-X)}{1-2X}$
(d) $\frac{(1+X)(1-2X)}{2-X}$
SCCGL2017-05AUG-S1 : 64

(109) If [2(4x/5 - 3/4)]/3 - 5/3 = -1/6, then the value of x is?
यदि [2(4x/5 - 3/4)]/3 - 5/3 = -1/6 है, तो x का मान क्या है?
SCCGL2017-06AUG-S1 : 61
(a) 4/15 (b) -15/4 (c) -4/15 (d) 15/4

(110) If $a^3 + b^3 = 35$ and ab = 6, then what is the value of a + b?
यिद $a^3 + b^3 = 35$ और ab = 6 है, तो a + b का मान क्या है?
SCCGL2017-06AUG-S1 : 62
(a) 5 (b) 8 (c) 2 (d) -8

(111) Sum of a fraction and thrice of its reciprocal is 73/20. What is the fraction?
एक भिन्न और उस भिन्न के व्युत्क्रम के तीन गुणा का योग 73/20 है। वह भिन्न क्या है?
SCCGL2017-06AUG-S1 : 63
(a) 4/5 (b) 9/4 (c) 4/9 (d) 5/4

(112) If $(x – 2)^2 + (y + 3)^2 + (z – 15)^2 = 0$, then what is the value of x + y + z – 5?
यदि $(x – 2)^2 + (y + 3)^2 + (z – 15)^2 = 0$ हो, तो x + y + z – 5 का मान क्या है?
SCCGL2017-06AUG-S1 : 75
(a) 5 (b) 9 (c) 1 5 (d) 20

(113) If 2x/3 - [5(4x/5 - 4/3)]/2 = 1/3, then what is the value of x?
यदि 2x/3 - [5(4x/5 - 4/3)]/2 = 1/3 है, तो x का मान क्या है?
SCCGL2017-06AUG-S3 : 61
(a) 9/4 (b) 4/9 (c) -9/4 (d) -4/9

(114) If $a^3 + b^3 = 28$ and a + b = 4, then what is the value of ab?
यदि $a^3 + b^3 = 28$ और a + b = 4 है, तो ab का मान क्या है?
SCCGL2017-06AUG-S3 : 62
(a) -3 (b) 2 (c) 8 (d)3

(115) 6 times a fraction is greater than 7 times its reciprocal by 11. What is the fraction?
एक भिन्न का 6 गुणा उस भिन्न के व्युत्क्रम के सात गुणा से 11 बड़ा है। वह भिन्न क्या है?
SCCGL2017-06AUG-S3 : 63
(a) 5/3 (b) 7/3 (c) 5/4 (d) 4/5

(116) If $x + (1/x) = 2$, then what is the value of $x^{64} + x^{121}$?
यदि $x + (1/x) = 2$, तो $x^{64} + x^{121}$ का मान क्या होगा?
SCCGL2017-08AUG-S1 : 61
(a) 0 (b) 1 (c) 2 (d) – 2

(117)
If $x = 6+2\sqrt{6}$, than what is the value of $\sqrt{X-1}+\frac{1}{\sqrt{X-1}}$?
यदि $x = 6+2\sqrt{6}$, तो $\sqrt{X-1}+\frac{1}{\sqrt{X-1}}$ का मान क्या है ?
SCCGL2017-08AUG-S1 : 62
(a) $2\sqrt{3}$ (b) $3\sqrt{2}$ (c) $2\sqrt{2}$ (d) $3\sqrt{3}$

(118) If $a + b + c = 27$, then what is the value of $(a – 7)^3 + (b – 9)^3 + (c – 11)^3 – 3(a – 7)(b – 9)(c – 11)$?
यदि $a + b + c = 27$, तो $(a – 7)^3 + (b – 9)^3 + (c – 11)^3 – 3(a – 7)(b – 9)(c – 11)$ का मान क्या है?
SCCGL2017-08AUG-S1 : 63
(a) 0 (b) 9 (c) 27 (d) 81

(119)
If $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}}$, than what is the value of $\frac{X+\sqrt{5}}{X-\sqrt{5}} + \frac{X+\sqrt{3}}{X-\sqrt{3}}$?
यदि $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}}$, तो $\frac{X+\sqrt{5}}{X-\sqrt{5}} + \frac{X+\sqrt{3}}{X-\sqrt{3}}$ का मान क्या है ?
SCCGL2017-08AUG-S1 : 64
(a) $\sqrt{5}$ (b) $\sqrt{3}$ (c) $\sqrt{15}$ (d) 2

(120) If 2/3(6x/5 - 1/4) + 1/3 = 9x/5, then what is the value of x?
यदि 2/3(6x/5 - 1/4) + 1/3 = 9x/5, तो x का मान क्या है?
SCCGL2017-23AUG-S3 : 61
(a) 1/6 (b) -1/6 (c) 1/5 (d) -1/5

(121) If $a^3 + b^3 = 341$ and $ab = 30$, then what is the value of $a + b$?
यदि $a^3 + b^3 = 341$ और $ab = 30$ है, तो $a + b$ का मान क्या है?
SCCGL2017-23AUG-S3 : 62
(a) 1 (b) 9 (c) 7 (d) 11

(122) Sum of a fraction and thrice its reciprocal is 31/6. What is the fraction?
एक भिन्न और उसके व्युत्क्रम के 3 गुना का योग 31/6 है। वह भिन्न कौन सा है?
SCCGL2017-23AUG-S3 : 63
(a) 2/9 (b) 9/4 (c) 9/2 (d) 4/9

(123) If 9x - [5(2x + 1)/2] = 9/2, then the value of x is?
यदि 9x - [5(2x + 1)/2] = 9/2, तो x का मान क्या है ?
SCCGL2017-20AUG-S2 : 61
(a) 7/4 (b) -7/4 (c) 4/7 (d) -4/7

(124) If $a + b = 4$ and $ab = -21$, then what is the value of $a^3 + b^3$?
यदि $a + b = 4$ और $ab = -21$, है, तो $a^3 + b^3$ का मान क्या होगा ?
SCCGL2017-20AUG-S2 : 62
(a) 370 (b) 158 (c) 185 (d) 316

(125) The sum of a fraction and 10 times its reciprocal is 37/4. What is the fraction?
एक भिन्न और उस भिन्न के व्युत्क्रण के 10 गुना का योग 37/4 है| भिन्न क्या है ?
SCCGL2017-20AUG-S2 : 63
(a) 5/4 (b) 4/5 (c) ¾ (d) 4/3

(126) If 10x/3 + 5/2(2 - x/3) = 7/2, then the value of x is?
यदि 10x/3 + 5/2(2 - x/3) = 7/2, तो x का मान क्या है?
SCCGL2017-22AUG-S3 : 61
(a) 3/5 (b) -5/3 (c) 5/3 (d) -3/5

(127) If $a - b = 2$ and $ab = 15$, then what is the value of $a^3 - b^3$?
यदि $a - b = 2$ और $ab = 15$ है, तो $a^3 - b^3$ का मान क्या है?
SCCGL2017-22AUG-S3 : 62
(a) 152 (b) 112 (c) 108 (d) 98

(128) The sum of a fraction and 4 times its reciprocal is 13/3. What is the fraction?
एक भिन्न और उस भिन्न के व्युत्क्रम के 4 गुना का योग 13/3 है। वह भिन्न क्या है?
SCCGL2017-22AUG-S3 : 63
(a) 4/3 (b) ¾ (c) 5/4 (d) 4/5

(129) If 7x - (3/2) * (4x - 9) = 6.5, then the value of x is?
यदि 7x - (3/2) * (4x - 9) = 6.5, तो x का मान क्या है?
SCCGL2017-23AUG-S1 : 61
(a) 7 (b) 2 0 (c) -7 (d) -2 0

(130) If a + b = 8 and ab = 15, then what is the value of a3 + b3?
यदि a + b = 8 और ab = 15 है, तो a3 + b3 का मान क्या है?
SCCGL2017-23AUG-S1 : 62
(a) 98 (b) 152 (c) 124 (d) 260

(131) The sum of a non-zero number and 4 times its reciprocal is 17/2. What is the number?
एक गैर-शून्य संख्या और उस संख्या के व्युत्क्रम के 4 गुना का योग 17/2 है। संख्या कौन सी है?
SCCGL2017-23AUG-S1 : 63
(a) 8 (b) 12 (c) 16 (d) 4

(132) If -3/2 + (2/3)(3x + 9) = x/2, then what is the value of x?
यदि -3/2 + (2/3)(3x + 9) = x/2, तो x का मान क्या है?
SCCGL2017-22AUG-S1 : 61
(a) -9 (b) 11 (c) 9 (d) -3

(133) If a - b = 2 and ab = 8, then what is the value of $a^3 - b^3$?
यदि a - b = 2 और ab = 8, तो $a^3 - b^3$ का मान क्या है?
SCCGL2017-22AUG-S1 : 62
(a) 65 (b) 34 (c) 43 (d) 56

(134) A non-zero number is greater than 7 times its reciprocal by 9.3. What is the number?
एक गैर शून्य संख्या अपने व्युत्क्रमानुपाति के 7 गुना से 9.3 बड़ी है। वह संख्या कौन सी है?
SCCGL2017-22AUG-S1 : 63
(a) 10 (b) 20 (c) 5 (d) 1 4

(135) If 1/3(12x/5 - 1/2) + 6/5 = 7/6, then what is the value of x?
यदि 1/3(12x/5 - 1/2) + 6/5 = 7/6, तो x का मान क्या है?
SCCGL2017-23AUG-S2 : 61
(a) 1/6 (b) -1/6 (c) 1/5 (d) -1/5

(136) If a - b = 10 and ab =-21, then what is the value of $a^3 - b^3$?
यदि a - b = 10 और ab = -21 है, तो $a^3 - b^3$ का मान क्या है?
SCCGL2017-23AUG-S2 : 62
(a) 316 (b) 370 (c) 185 (d) 158

(137) Sum of twice a fraction and 5 times its reciprocal is 7. What is the fraction?
एक भिन्न का दोगुना और उसके व्युत्क्रम के 5 गुना का योग 7 है। वह भिन्न कौन सा है?
SCCGL2017-23AUG-S2 : 63
(a) 2/5 (b) 5/4 (c) 5/2 (d) 4/5

(138) If (-1/2) * (x - 5) + 3 = -5/2, then what is the value of x?
यदि (-1/2) * (x - 5) + 3 = -5/2, तो x का मान क्या है?
SCCGL2017-20AUG-S3 : 61
(a) 16 (b) 4 (c) -6 (d) -4

(139) If a - b = 1 and ab = 6, then what is the value of $a^3 - b^3$?
यदि a - b = 1 और ab = 6, तो $a^3 - b^3$ का मान क्या है?
SCCGL2017-20AUG-S3 : 62
(a) 21 (b) 23 (c) 19 (d) 25

(140) A number is greater than 58 times its reciprocal by 3/4. What is the number?
एक संख्या अपने व्युत्क्रमानुपाती के 58 गुना से 3/4 बड़ी है। वह संख्या कौन सी है?
SCCGL2017-20AUG-S3 : 63
(a) -8 (b) 12 (c) -12 (d) 8

Answer Key

1	D	2	A	3	D	4	C	5	C
6	A	7	D	8	B	9	C	10	D
11	D	12	D	13	B	14	D	15	D
16	C	17	B	18	B	19	B	20	D
21	C	22	A	23	B	24	A	25	B
26	A	27	C	28	B	29	A	30	D
31	B	32	C	33	D	34	C	35	B
36	D	37	B	38	B	39	A	40	C
41	C	42	C	43	B	44	D	45	D
46	B	47	A	48	A	49	A	50	C
51	A	52	C	53	B	54	C	55	D
56	B	57	C	58	A	59	D	60	B
61	C	62	A	63	B	64	A	65	B
66	B	67	D	68	C	69	C	70	A
71	B	72	D	73	C	74	A	75	A
76	D	77	B	78	B	79	C	80	C
81	B	82	D	83	A	84	C	85	A
86	C	87	B	88	A	89	C	90	C
91	B	92	B	93	C	94	D	95	A
96	C	97	C	98	D	99	D	100	C
101	B	102	A	103	A	104	A	105	A
106	C	107	D	108	C	109	D	110	A
111	D	112	B	113	A	114	D	115	B
116	A	117	A	118	A	119	D	120	A
121	D	122	C	123	A	124	D	125	A
126	D	127	D	128	A	129	C	130	B
131	A	132	D	133	D	134	A	135	A
136	B	137	C	138	A	139	C	140	D

Solution

(1)

(2)

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

$$= x^2 + 1 = 3x$$

$$= x^4 + 1 + 2x^2 = 9x^2$$

$$= x^4 + 1 = 7x^2$$

$$\therefore \frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{x^4+1} = \frac{7x^2+3x^2+5x\,(x^2+1)}{7x^2}$$

$$= \frac{10x^2+5x\times3x}{7x^2} = \frac{10x^2+15x^2}{7x^2} = \frac{25}{7}$$

(3)

$$3a - \frac{1}{3a} = 1$$

$$= a - \frac{1}{a} = 1$$

$$= a^2 + \frac{1}{a^2} = 3$$

$$= a^3 - \frac{1}{a^3} + 2 = \left(a - \frac{1}{a}\right)\left(a^2 + \frac{1}{a^2} + 1\right) + 2$$

$$= 1\,(3 + 1) + 2 = 6$$

(4)

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

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

$$= 2x^2 - 1 = 97$$

$$= 2x^2 = 98$$

$$x^2 = 49$$

$$X = 7$$

(5)

$\frac{A}{3} = \frac{B}{2} = \frac{C}{5} = K$(let)

A = 3K, B = 2K, C = 5K

$\therefore (C + A)^2 + (A + B)^2 + (B + C)^2 = (8k)^2 : (5k)^2 : (7k$

= 64 : 25 : 49

(6)

$$\frac{x^2}{yz} + \frac{y^2}{xz} + \frac{z^2}{xy} = x^3 + y^3 + z^3 = 3xyz$$

$\therefore x + y + z = 0$

$\therefore (x + y + z)^3 = 0$

(7)

let x = 1

$\therefore 7^{81} + \frac{1}{x^{81}} = 1 + 1 = 2$

(8)

a(a + b + c) + b (a + b + c) + c (a+ b + c) = 45 + 75 + 105

→ (a + b + c) (a + b + c) = 225

→ (a + b + c) = 15

a (a+ b + c) = 45 → a = 3

b(a + b + c) = 45 → b = 5

c (a + b + c) = 105 → c = 7

$\therefore a^2 + b^2 + c^2 = 9 + 25 + 49 = 83$

(9)

$$x^2 + \frac{1}{x^2} = 1,\ x^2 + \frac{1}{x^2} - 1 = 0$$

$$= \left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right) = 0$$

$$= x^3 + \frac{1}{x^3} = 0$$

$= x^6 + 1 = 0$

Now, $x^{48} + x^{42} + x^{36} + x^{30} + x^{24} + x^{18} + x^{12} + x^6 + 1$

$= x^{42}\,[x^6 + 1] + x^{30}\,[x^6 + 1] + x^{18}\,(x^6 + 1) + x^6\,(x^6 + 1) + 1$

= 1

(10)

For complete square D=0

Here a=1,b=18,c=k

$D=b^2-4ac$

$0=182-4 \times 1 \times k$

K=9

(11)

$$\frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}} \times \frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}} = \frac{\left(\sqrt{5+x}+\sqrt{5-x}\right)^2}{5+x-5+x} = 3$$

$$\text{Or, } \frac{5+x+5-x+2\sqrt{25-x^2}}{2x} = 3$$

$$\text{Or, } 6x = 10 + 2\sqrt{25 - x^2}$$

$$36x^2 + 100 - 120x = 4(25 - x^2)$$

$$36x^2 - 120x + 4x^2 = 0$$

$$40x^2 - 120x = 0$$

$$x = 3$$

(14)

5/2-(6/5)(x-15/2)=-x/5

5/2-(6/5)x+9=-x5

5/2+9=-x/5+(6/5)x

23/2=x

(15)

Here we have,

$a^3-b^3=(a-b)^3+3ab(a+b)$

$a^3-b^3=2+3(24)(2)=8+144=152$

(16)

$$-3\left(1-\frac{x}{2}\right)+\frac{5x}{3}=\frac{1}{6}$$
$$-3+\frac{3x}{2}+\frac{5x}{3}=\frac{1}{6}$$
$$\frac{9x+10x}{6}=\frac{1}{6}+3=\frac{19}{6}$$
$$x=1$$

(17)

a + b = 3, ab = (-4)

= -1 × 4

$a^3 + b^3 = (-1)^3 + (4)^3$

= -1 + 64 = 63

(18)

$x^2 - 8x + 15 = 0$

(x – 5) (x – 3)

X = 5, 3

$y^2 + 2y - 35 = 0$

(y + 7) (y – 5) = 0

y = -7, 5

common root = 5

$(5)^3 - (5)^2 = 100$

(19)

$$\left(x-\frac{1}{3}\right)^2+(y-4)^2=0$$
$$\left(x-\frac{1}{3}\right)^2=0 \quad (y-4)^2=0$$
$$x=\frac{1}{3} \qquad y=4$$
$$\frac{y+x}{y-x}=\frac{4+\frac{1}{3}}{4-\frac{1}{3}}=\frac{13}{11}$$

(20)

$$x^2+\frac{1}{x^2}-6=0$$
$$x^2+\frac{1}{x^2}=6$$
$$x^2+\frac{1}{x^2}+2=6+2$$
$$\left(x+\frac{1}{x}\right)^2=8$$
$$x+\frac{1}{x}=2\sqrt{2}$$
$$x^2+1=2\sqrt{2}\,x$$
$$x^2-2\sqrt{2}x+1=0$$
$$D=b^2-4ac=8-4=4$$

(21)

$$x+\frac{1}{x}=\sqrt{13}$$
$$x^5-\frac{1}{x^5}=\left(x^2+\frac{1}{x^2}\right)\left(x^3-\frac{1}{x^3}\right)\left(x-\frac{1}{x}\right)$$
$$x+\frac{1}{x}=\sqrt{13}$$
$$x^2+\frac{1}{x^2}=11 \text{ ---------(i)}$$
$$\left(x-\frac{1}{x}\right)^2+2=11$$
$$\left(x-\frac{1}{x}\right)^2=9$$
$$x+\frac{1}{x}=3 \text{ ---------- (ii)}$$
$$x^3-\frac{1}{x^3}-3x\times\frac{1}{2}\left(x-\frac{1}{x}\right)=27$$
$$x^3-\frac{1}{x^3}=27+3\times3$$
$$x^3-\frac{1}{x^3}=36$$
$$x^5-\frac{1}{x^5}=11\times36-3$$
$$396-3=393$$

(26)

$$7x-\frac{3(2x-3)}{2}=\frac{1}{2}$$
$$14x-6x+9=1$$
$$x=-1$$

(27)

a+b=4

ab=3

a=3,b=1

$a^3+b^3=3^3+1^3=28$

(28)

If (x – 2) & (x + 3) are factors, the x = 2 and -3 satisfied the equation.

$4 + 2\times K_1 + K_2 = 0$ -------- (i)

$9 - 3\times K_1 + K_2 = 0$ ---------- (ii)

After Solving we get

$k_1 = 1$. $K_2 = -6$

(29)

x – y = 7

Let x = 15 & y = 8

Put the value in equation

$(x - 15)^3 - (y - 8)^3 = (15 - 15)^3 - (8 - 8)^3$

= 0

(30)

$x - y - \sqrt{18} = -1$,

$x + y - 3\sqrt{2} = 1$

$x - y = 3\sqrt{2}-1$ -------- (i)

$x + y = 1 + 3\sqrt{2}$ ----------(ii)

So, (x2 – y2) = 17

From eq. (i) & (ii)

x = 3√2, y = 1
So, 12xy (x2 – y2)
= 12 × √18×1 (17)
= 612√2

(31)

$\frac{p}{q}=\frac{r}{s}=\frac{t}{u}=\sqrt{5}$

$P^2=5q^2$

$r^2=5s^2$

$t^2=5u^2$

$3p^2+4r^2+st^2=5(3q^2+3r^2+3u^2)$

Then, $\left(\frac{3p^2+4r^2+5t^2}{3q^2+4r^2+5u^2}\right)=5$

(32)

$$\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=0$$

$\frac{(xy+zx+yz)}{xyz}=0$

xy + yz+zx = 0....(i)

x + y + z = 9....(ii)

$x^3 + y^3 + z^3 - 3xyz = [(x + y +z) (x^2 + y^2 + z$

$= [9 \times (x^2 + y^2 + z^2)]$

$=9 [(x + y +z)^2 - 2 (xy + yz +zx)]$

$=9 \times 9 \times 9$

$=729$

(33)

$x^4+\frac{1}{x^4}+2=34+2$

$\Rightarrow \left(x^2+\frac{1}{x^2}\right)^2=36$

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

$\Rightarrow \left(x-\frac{1}{x}\right)^2=4$

$\Rightarrow x-\frac{1}{x}=2$ cubing both sides

$\Rightarrow x^3-\frac{1}{x^3}=8+(3\times2)$

$= 14$

(34)

x + y = 1

$x^2 + y^2 = 2$

$\Rightarrow (x + y)^2 = x^2 + y^2 + 2xy$

1 = 2 + 2xy

xy = -½

(35)

$x+\frac{1}{(x+7)}=0,$

$(x+7)+\frac{1}{(x+7)}=7$

Value of $x-\frac{1}{(x+7)}=?$

Squaring both sides

$(x+7)^2+\frac{1}{(x+7)^2}+2=49$

$-2+(x+7)^2+\frac{1}{(x+7)^2}=47-2$

$(x+7)-\frac{1}{(x+7)}=\sqrt{45}$

$\Rightarrow x-\frac{1}{(x+7)}=3\sqrt{5}-7$

(36)

$\alpha/\beta + \beta/\alpha$

$=\frac{\alpha^2+\beta^2}{\alpha\beta}$.....(i)

Since $\alpha + \beta = 13/3$

$\alpha\beta = 14/3$

$(\alpha + \beta)^2 = \alpha^2 + \beta^2 + 2\alpha\beta$

$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$.....(ii)

∴ from (i) and (ii)

$\frac{(\alpha+\beta)^2-2\alpha\beta}{\alpha\beta}$

$=\frac{\left(\frac{13}{3}\right)^2-\frac{28}{3}}{\frac{14}{3}}$

$=\frac{\frac{169-84}{9}}{\frac{14}{3}}=\frac{85\times3}{9\times14}$

$= 85/42$

(37)

$a^3 + b^3 + c^3 - 3abc = (a + b + c) (a^2 + b^2 + c^2 - ab – bc – ca)$

As we now

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

$81 = a^2 + b^2 + c^2 + 36$

$a^2 + b^2 + c^2 - 81 – 36 = 45$

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

= (9) (45 - 18)

= 9 ×27

=243

(38)

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

$\frac{x^2+y^2}{xy} = 0$

$x^2 + y^2 - xy = 0$

As we know

$x^3 + y^3 = (x + y)(x^2 + y^2 - xy)$

$=(x + y) \times 0$

$= 0$

(39)

$5^x = 3^{-y} = 6^z$

Let $5^x = 3^{-y} = 6^z = k$

$5 = k^{\frac{1}{x}}$

$30 = k^{-\frac{1}{y}}$

$6 = k^{\frac{1}{z}}$

$6 \times 5 = 30$

$k^{\frac{1}{x}} \times k^{-\frac{1}{y}} = k^{\frac{1}{z}}$

$\frac{1}{x} + \frac{1}{z} + \frac{1}{y} = 0$

Or, $\frac{(xy + yz + zx)}{xyz} = 0$

(40)

$2x^2 + 3x - 90 = 0$

$2x^2 + 15x - 12x - 90 = 0$

$x(2x + 15) - 6(2x + 15) = 0$

$\therefore x = {}^{-15}/_{2}$ or 6

And, ${}^{7}/_{\sqrt{y}} + {}^{2}/_{\sqrt{y}} = \sqrt{y}$

$7+2=y$

$y = 9$

$x^2 + y^2 = (6)^2 + (9)^2$

$= 36 + 81 = 117$

(41)

$\frac{7x^2-19xy+11y^2}{y^2}$

$= 7({}^{x}/_{y})^2 - 19({}^{x}/_{y}) + 11$

$= 7 \times ({}^{4}/_{9})^2 - 19({}^{4}/_{9}) + 11$

$=\frac{7\times16}{81} - \frac{76}{9} + 11$

$= \frac{112-684+891}{81}$

$= {}^{319}/_{81}$

(42)

$(x - 3) + {}^{1}/_{(x-3)} = 4$

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

$= (x -3)^3 + \frac{1}{(x-3)^3} + 3(x-3) \times {}^{1}/_{(x-3)} \left[(x-3) + \frac{1}{(x-3)}\right]$

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

$\therefore (x - 3)^3 + \frac{1}{(x-3)^3} = 64 - 12 = 52$

(43)

$x^2 + y^2 + z^2 = xy + yz + zx$

if $x = y = z = 1$

$\therefore \frac{7x+3x-5x}{5x} = \frac{7+3-5}{5}$

$= 1$

(44)

$a^3 + b^3 + c^3 - 3abc = (a+ b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

$(11)^2 = a^2 + b^2 + c^2 + 2 \times 17$

$121 - 34 = a^2 + b^2 + c^2$

$a^2 + b^2 + c^2 = 87$

$a^3 + b^3 + c^3 - 3abc = 11 \times (87 - 17)$

$= 11 \times 70$

$= 770$

(45)

$x^4 + \frac{1}{x^4} = 62$

$\Rightarrow x^4 + {}^{1}/_{x^4} + 2 = 62 + 2$

$\Rightarrow \left(x^2 + \left(x^2 + \frac{1}{x^2}\right)^2\right) = 64$

$\left(x^2 + \frac{1}{x^2}\right) = 8$

$\left(x^6 + \frac{1}{x^2}\right) = (8)^3 - 3 \times 8$

$= 512 - 24$

$= 488$

(46)

$x + y = 4$ ...(1)

$\frac{2}{x-2} + \frac{2}{y-2}$

$\frac{2[(y-2)+(x-2)]}{(x-2)(y-2)}$

From Eq(1)

$x + y = 4$

$(x - 2) + (y - 2) = 0$

so, $\frac{2\times 0}{(x-2)(y-2)} = 0$

(47)

$(x/5 + 5/x) = -2$

$\Rightarrow (x^2 + 25)/5x = -2$

$\Rightarrow x^2 + 25 = -10x$

$\Rightarrow x^2 + 10x + 25 = 0$

$\Rightarrow (x + 5)^2 = 0$

$\Rightarrow x = -5$

So, $x^3 = -125$

(48)

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

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

$\Rightarrow \frac{1}{(1-x)x^2} \times x(1-x)$

$= \frac{1}{x}$

(49)

$x + \frac{1}{x} = 17$

Now, $\frac{x^4+\frac{1}{x^2}}{x^{2-3x+1}}$

$= \frac{x\left(x^3+\frac{1}{x^3}\right)}{x\left(x-3+\frac{1}{x}\right)}$

$= \frac{x^3+\frac{1}{x^3}}{\left(x+\frac{1}{x}\right)-3}$

$= \frac{4913-51}{17-3} = \frac{4862}{14}$

$= \frac{2431}{7}$

(50)

$\sqrt{\frac{1+x}{x}} - \sqrt{\frac{x}{1+x}} = \frac{1}{\sqrt{6}}$

$\Rightarrow \frac{\left(\sqrt{1+x}\right)^2-\left(\sqrt{x}\right)^2}{\sqrt{x(1+x)}} = \frac{1}{\sqrt{6}}$

$\Rightarrow \frac{1+x-x}{\sqrt{x(1+x)}} = \frac{1}{\sqrt{6}}$

$\Rightarrow \frac{1}{x(1+x)} = \frac{1}{6}$

$\Rightarrow x^2 + x - 6 = 0$

$\Rightarrow x^2 + 3x - 2x - 6 = 0$

$\Rightarrow x(x + 3) - 2(x + 3) = 0$

$\Rightarrow (x - 2)(x + 3) = 0$

$\Rightarrow x = 2, -3$

(51)

$2\left[x^2 + \frac{1}{x^2}\right] - 2\left[x - \frac{1}{x}\right] - 8 = 0$

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

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

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

Let $x - \frac{1}{x} = y$

$y^2 - y - 2 = 0$

$y = 2, -1$

(52)

$x+1/x=2$ Satisfy only when $x=1$

$x^{21} + (1/x^{1331})=2$

(53)

$(x + y)^3 = x^3 - y^3 - 3xy(x - y)$

$27 = 81 - 3xy \times 3$

$9xy = 54$

$xy = 6$

Now,

$(x - y)^2 = x^2 + y^2 - 2xy$

$9 = x^2 + y^2 - 12$

$x^2 + y^2 = 21$

(54)

$\sqrt{5x-6}+\sqrt{5x+6}=6$ -------- (i)

$\sqrt{5x-6}-3=3-\sqrt{5x+6}$

Squaring both sides

$5x-6+9-6\sqrt{5x+6}=9+5x+6-6\sqrt{5x+6}$

$-2=-\sqrt{5x+6}+\sqrt{5x-6}$ ---- (ii)

Solving (i) and (ii)

$\sqrt{5x-6}=2$

x = 2

(55)

2x+1/2x=2

$2x^2+1=4x$

After Solving we get x= ½

Put the value in equation then we get 8

(56)

$$\frac{1}{xp-q+1}+\frac{1}{xq-p+1}$$

$$=\frac{1}{\frac{xp}{xq}+1}+\frac{1}{\frac{xq}{xp}+1}$$

$$=\frac{xq}{xp+xq}+\frac{xp}{xq+xp}$$

$$=\frac{xq+xp}{xp+xq}=1$$

(57)

$x=(\sqrt{5}+\sqrt{3})^2$

$\therefore \sqrt{x}=\sqrt{5}+\sqrt{3}$

$\frac{1}{\sqrt{x}}=\frac{\sqrt{5}-\sqrt{3}}{2}$

$\therefore \sqrt{x}+\frac{1}{\sqrt{x}}=\sqrt{5}+\sqrt{3}+\frac{\sqrt{5}-\sqrt{3}}{2}$

$=\frac{3\sqrt{5}+\sqrt{3}}{2}$

(58)

$$\frac{1+a}{\frac{1}{a^{2+a}}\frac{1}{2}}-\frac{\frac{1}{a^{2+a}}-\frac{1}{2}}{1+a}+a\frac{1}{2}$$

$$=\frac{1+a}{\sqrt{a}+\frac{1}{\sqrt{a}}}-\frac{\sqrt{a}+\frac{1}{\sqrt{a}}}{1+a}+\frac{1}{\sqrt{a}}$$

$$=\sqrt{a}-\frac{1}{\sqrt{a}}-\frac{1}{\sqrt{a}}=\sqrt{a}$$

(59)

$$\frac{p^2+q^2}{p^2-q^2}=\frac{\left(\frac{p}{q}\right)^2+1}{\left(\frac{p}{q}\right)^2-1}$$

ATQ

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

$$=\frac{2(x^2+9)}{2\times 6x}=\frac{x^2+9}{6x}$$

(60)

$5x-\frac{1}{2}(2x-7)=5.5$

$\Rightarrow 5x-x+\frac{7}{2}=5.5$

$\Rightarrow 4x=2$

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

(61)

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

$(a-b)^2=4^2-4\times -5$

a-b=6

a+b=4

a=5,b=-1

$\therefore a^3+b^3=(5)^3+(-1)^3=124$

(62)

From, $(4)^{(x+y)}=256$

$(4)^{(x+y)}=(4)^4$

On equating powers, we get

x + y = 4 .....(i)

From,

$(256)^{(x-y)}=4$

$(4)^{4(x-y)}=(4)^1$

Again equating powers, we get

x – y = ¼ .....(ii)

On solving (i) and (ii) we get

$x=\frac{17}{8}$ and $y=\frac{15}{8}$

(63)

$\Rightarrow x^2-x-6$

$\Rightarrow (x-3)(x+2)$

The expression (px^3-qx^2-7x-6) will result 0 at x = 3 and x = -2, as it is divisible by

(x + 3) and (x + 2)

At $x=3\Rightarrow (3)^3p\times(3)^2q-7\times(3)-6=0$

$27p-9q=27$ .....(i)

At $x=-2\Rightarrow (-2)^3p-(-2)^2q-7\times(-2)-6=0$

$-8p-4q=-8$ .....(ii)

On solving (i) and (ii) we get, p = 1 and q = 0

(64)

$(x^2-9)=(x-3)(x-3)$

Given expression $(px^3-2x^2-qx+18)$ will result to 0 when

X = 3 and x = -3, as it is completely divisible by (x + 3) and (x – 3)

At $x=3\Rightarrow (3)^3p-(3)^2\times 2-3q+18=0$

$27p=3q$

q = 9p
∴ $^{p}/_{q} = {}^{1}/_{9} = 1 : 9$

(65)

$$x + \frac{1}{x} = 5$$
$$\Rightarrow x^2 + \frac{1}{x^2} = 23 \quad .....(i)$$
$$\text{and } x^3 + \frac{1}{x^3}(5)^3 - 3 \times 5 = 110$$
$$\left(x^3 + \frac{1}{x^3}\right) = 110 \ldots.(ii)$$

Multiply eq (i) with eq (ii)

$$\left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = 23 \times 110$$
$$\left(x^5 + \frac{1}{x^5}\right) + \left(x + \frac{1}{x}\right) = 2530$$
$$\left(x^5 + \frac{1}{x^5}\right) = 2530 - 5$$
$$\left(x^5 + \frac{1}{x^5}\right) = 2525$$

(70)

$$\frac{x}{3} - \frac{\left[\left(\frac{7x}{5} - \frac{4}{5}\right)\right]}{2} = \frac{-x}{6}$$
$$\Rightarrow \frac{2x}{3} - 7x + \frac{20}{3} = \frac{-x}{3}$$
$$\Rightarrow 7x - \frac{2x}{3} - \frac{x}{3} = \frac{20}{3}$$
$$\Rightarrow 6x = \frac{20}{3} \Rightarrow x = \frac{20}{3 \times 6}$$
$$\Rightarrow x = \frac{10}{9}$$

(71)
Let a = 3 and b = -2
Which satisfies both given condition
a + b = 3 – 2 = 1
And,
$a^3 + b^3 = (3)^3 + (-2)^3 = 19 = 19$
∴ ab = -3 × 2 = -6

(72)
17/3 + [3(2x – 5/3)] × 1/2 = 1/6
3x – 5/2 = 1/6 – 17/3
3x = -33/6 + 5/2
3x = -18/6
x = -1

(73)
We know,
$(a + b)^3 = a^3 + b^3 + 3ab\,(a + b)$
$(5)^3 = a^3 + b^3 + 3 \times 6 \times 5$
$a^3 + b^3 = 35$

(74)
Let the fraction be x
ATQ,
x + 3/x = 37/10
$10x^2$ - 37x + 30 = 0
$10x^2$ - 25x – 12x + 30 = 0
5x (2x - 5) – 6 (2x - 5) = 0
(5x - 6) (2x – 5) = 0
X = 5/2 { as it is given in the options}

(75)

$$\frac{5x}{2} - \frac{\left[7\left(6x - \frac{3}{2}\right)\right]}{4} = \frac{5}{8}$$
$$\Rightarrow 10x - 7\left(6x - \frac{3}{2}\right) = 5/2$$
$$\Rightarrow 10x - 42x + 21/2 = 5/2$$
$$\Rightarrow 32x = 16/2$$
$$\Rightarrow x = 1/4$$

(76)
a-b=1
$\Rightarrow (a-b)^2 = 1^2$
$\Rightarrow a^2 + b^2 - 2ab = 1$
$\Rightarrow a^2 + b^2 = 1 + 2ab$ .....(i)
$\Rightarrow a^3 - b^3 = (a-b)(a^2 + b^2 + ab)$
$\Rightarrow 91 = 1(1 + 2ab + ab)$
ab=30

(77)
Let the fraction be x
x – 2/x = 7/15
$\Rightarrow x^2$ - 2 = 7x/15
$\Rightarrow 15x^2$ -30 = 7x
$\Rightarrow 15x^2$ - 7x – 30 = 0
On solving
x = 5/3

(78)

$$\frac{7}{2}\left(\frac{5x}{3} - \frac{3}{2}\right) + \frac{3}{2} = \frac{1}{4}$$
$$\frac{7}{2}\left(\frac{5x}{3} - \frac{3}{2}\right) = \frac{-5}{4}$$
$$\frac{5x}{3} = \frac{-5}{14} + \frac{3}{2}$$
$$X = \frac{24}{35}$$

(79)
Solve from option by pitting the value 3,-2

(80)

$$\frac{\left[4\left(\frac{2x}{5}-\frac{3}{2}\right)\right]}{3}+\frac{7}{5}=\frac{37}{5}$$

$$\Rightarrow 4\left(\frac{2x}{5}-\frac{3}{2}\right)+\frac{21}{5}=\frac{37\times3}{5}$$

$$\Rightarrow\frac{8x}{5}-6=\frac{111-21}{5}$$

$$\Rightarrow \frac{8x}{5}=\frac{90}{5}+6$$

$$\Rightarrow x=\frac{24\times5}{8}=15$$

(81)

Let a = 1 and b = -3

Which satisfies both the given eqn.

a – b = 1 – (-3) = 4 (satisfies)

ab = 1 × -3 = -3 (satisfies)

$\therefore a^3 - b^3 = 1^3 - (-3)^3 = 28$

(82)

x + 1/x = 5

$\Rightarrow x^2 + 1/x^2 = 23$

$\Rightarrow (x - 1/x)^2 = x^2 + 1/x^2 - 2$

= 23 – 2

$x - 1/x = \pm \sqrt{21}$

(83)

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

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

$$=2+1+2\sqrt{2}$$

$$x=3+2\sqrt{2}\ \ldots.(i)$$

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

$$=\frac{3-2\sqrt{2}}{9-8}$$

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

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

$$=6$$

$$\text{Now, }\frac{x^5+x^4+x^2}{X^3}$$

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

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

$$=(36-2)+6$$

$$=40$$

(84)

$$x=5-2\sqrt{6}$$

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

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

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

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

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

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

$$=2\sqrt{3}$$

(85)

$$27^x+27^{\left[x-\left(\frac{1}{3}\right)\right]}=972$$

We can write it as

$$27^x+27^{\left(x-\frac{1}{3}\right)}=729+243$$

$$27^x+27^{\left(x-\frac{1}{3}\right)}=27^2+(27)^{5/3}$$

On comparing, x = 2

(86)

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

$= ½ (a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$

$= ½ (73 + 74 + 75)[(73 - 74)^2 + (74 - 75)^2 + (75 - 73)^2]$

$= ½ \times 222 \times (1 + 1 + 4) = 666$

(87)

$$x^2+\frac{1}{x^2}=\frac{31}{9}$$

$$\Rightarrow x^2+\frac{1}{x^2}+2=\frac{31}{9}+2$$

$$\Rightarrow\left(x+\frac{1}{x}\right)^2=\frac{49}{9}$$

$$\Rightarrow x+\frac{1}{x}=\frac{7}{3}$$

Now cubing both sides,

$$x^3+\frac{1}{x^3}=\left(\frac{7}{3}\right)^3-3\times\frac{7}{3}$$

$$\Rightarrow x^3+\frac{1}{x^3}=\frac{343}{27}-7$$

$$\Rightarrow x^3+\frac{1}{x^3}=\frac{154}{27}$$

(88)

$$\frac{(x^2-5x+6)}{(x^2-3x)+2} \div \frac{(x^2-7x+12)}{(x^2-5x+4)}$$
$$= \frac{(x^2-3x-2x+6)}{(x^2-x-2x+2)} \div \frac{(x^2-4x-3x+12)}{(x^2-x-4x+4)}$$
$$= \frac{(x-2)(x-3)}{(x-1)(x-2)} \div \frac{(x-3)(x-4)}{(x-4)(x-1)}$$
$$= \frac{(x-3)}{(x-1)} \times \frac{(x-1)}{(x-3)} = 1$$

(89)

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

$\Rightarrow x^2 - 1 = 3x$ ...(i)

$\Rightarrow (x^2 - 1)^2 = 9x^2$

$\Rightarrow x^4 + 1 - 2x^2 = 9x^2$ .....(ii)

$\Rightarrow (x^4 + 1) = 11x^2$

Now,

$$\frac{2x^4+3x^3+13x^2-3x+2}{3x^4+3}$$
$$= \frac{2(x^4+1)+13x^2+13x^3-3x}{3(x^4+3)}$$
$$= \frac{2(11x^2)+13x^2+3x^3-3x}{3(11x^2)} \text{ using ....eq(2)}$$
$$= \frac{35x^2+3x^3-3x}{33x^2}$$
$$= \frac{35x+3(x^2-1)}{33x} \text{ using .....(i)}$$
$$= \frac{35x+3(3x)}{33x} = \frac{44x}{33x} = \frac{4}{3}$$

(93)

x/2 + x/18 – 4/3 ×15/2 + 4x/9 = 0

9x+x/18 + 4x×2/9×2 = 10

10x+8x/18 = 10 ⇒ x = 10

(94)

a + b = 8

$a^3 + b^3 = 152$, if a = 5, b = 3 satisfied both equation.

So, ab = 5 × 3 = 15

(95)

Let fraction = x/y

So, x/y = y/x + 9/20_____(i)

By using options.

x/y = 5/4 so, put in R.H.S.

⇒ 4/5 + 9/20 = 16+9/20 = 25/20 = 5/4

So, the fraction is 5/4

(96)

5x + 6(3 – 2x) = 4

5x + 18 – 12x = 4

7x = 14

x =2

(97)

a + b = 1 & a.b = -6

So, a = 3, b = -2

Satisfied the equations

So, $a^3 + b^3 = 27 + (-8) = 19$

(98)

ATQ, let the number = x

x + 20 × 1/x = 9

$x^2 + 20 = 9x$

$x^2 - 9x + 20 = 0$

x = 4, 5 but in option only 5 is given

(99)

$$\frac{5}{2}\left(\frac{8x}{3} - \frac{1}{2}\right) + \frac{13}{2} = \frac{2x}{3}$$
$$\frac{20x}{3} - \frac{5}{4} + \frac{13}{2} = \frac{2x}{3} \Rightarrow \frac{20x}{3} - \frac{2x}{3} = \frac{5}{4} - \frac{26}{4}$$
$$\frac{18x}{3} = -\frac{21}{4} \Rightarrow x = -\frac{7}{8}$$

(100)

$a^3 + b^3 = 72$ _____(i)

ab = 8 _____(ii)

by value putting method

take a = and b = 2 that satisfied both the equations.

So, a + b = 4 + 2 = 6

(101)

From options-

Let, 7/2 ⇒ 4 × 7/2 + 2/7 × 7 = 16

Satisfied the conditions.

(102)

$$\frac{14}{3} + \frac{1}{2}\left(x - \frac{7}{3}\right) = \frac{-2x}{3}$$
$$\frac{14}{3} - \frac{7}{6} = \frac{-2x}{3} - \frac{x}{2}$$
$$\frac{21}{6} = \frac{-7x}{6}$$
$$x = -3$$

(103)

a + b = 10

$(a + b)^3 = 1000$

$a^3 + b^3 + 3ab(a + b) = 1000$

$a^3 + b^3 + 3 \times 24 \times 10 = 1000$

$a^3 + b^3 = 280$

(104)

Let the fraction be 'x'.

ATQ

x + 3/x = 19/4

$4x^2 - 19x + 12 = 0$
$4x^2 - 16x – 3x + 12 = 0$
$4x(x - 4) – 3(x - 4) = 0$
$(4x - 3) (x - 4) = 0$
X = ¾ or 4
X = ¾ (as it is given in the options)

(107)

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

$$\Rightarrow x^2 + \frac{1}{x^2} = 14$$

$$\Rightarrow x^6 + \frac{1}{x^6} = ?$$

$$\Rightarrow (14)^3 - 3 \times 14$$

$$\Rightarrow 2744 - 42$$

$$\Rightarrow 2702$$

(123)
$9x – 5/2 \times 2x – 5/2 = 9/2$
$9x – 5x = 9/2 + 5/2 = 7$
$4x = 7$
$x = 7/4$

(124)
a + b = 4_____(i)
ab = -21 _____(ii)
We put 7 & -3 of a & b values
A = 7, b = -3
So,
$a^3 + b^3 = 343 – 27 = 316$

(125)

$$\frac{x}{y} + \frac{10y}{x} = \frac{37}{4}$$

We go through options.

Put $\frac{x}{y} = \frac{5}{4}$

$$\frac{5}{4} + 10 \times \frac{4}{5} = \frac{5}{4} + 8 = \frac{5+32}{4} = \frac{37}{4}$$

(126)

$$\frac{10x}{3} + \frac{5}{2}\left(2 - \frac{x}{3}\right) = \frac{7}{2}$$

$$\frac{10x}{3} + 5 - \frac{5x}{6} = \frac{7}{2}$$

$$\frac{15x}{6} = \frac{7}{2} - 5$$

$$X = \frac{-3}{5}$$

(127)
$a – b = 2$
$(a - b)^3 = 8$
$a^3 - b^3 - 3ab (a - b) = 8$
$a^3 - b^3 - 3 (15) (2) = 8$
$a^3 - b^3 = 8 + 90 = 98$

(128)
Let the fraction be x.
ATQ
$X + 4/x = 13/3$
$3x^2 - 13x + 12 = 0$
$3x^2 - 9 – 4x + 12 = 0$
$3x(x - 3) – 4 (x - 3) = 0$
$(3x – 4) (x - 3) = 0$
x = 4/3 or 3
x = 4/3 {as it is given in options}

(132)

$$\frac{-3}{2} + \frac{2}{3}(3x + 9) = \frac{x}{2}$$

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

$$2x - \frac{x}{2} = \frac{3}{2} - 6$$

$$\frac{3x}{2} = \frac{-9}{2}$$

$$x = -3$$

(133)
$a – b = 2$
$(a - b)^3 = 8$
$a^3 - b^3 - 3ab(a - b) = 8$
$a^3 - b^3 - 3 \times 8(2) = 8$
$a^3 - b^3 = 8 + 48 = 56$

(134)
Let the number be x.
ATQ
$x = 7/x + 9.3$
$x^2 - 9.3x – 7 = 0$
$x^2 - 10x + 0.7x – 7 = 0$
$x(x - 10) + 0.7 (x - 10) = 0$
$(x + 0.7) (x - 10) = 0$
$\therefore x = 10$