

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

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

#



46. If $x + y = 14$, product of x and y is 45, then the value of $x^4 + y^4$ is:

यदि $x + y = 14$ है, तथा x और y का गुणनफल 45 है, तो $x^4 + y^4$ का मान ज्ञात कीजिए।

(RRB NTPC GRADUATE LEVEL 2025)

[A] 7177

[B] 7141

[C] 7090

[D] 7186 ✓

$$9^4 + 5^4 = 6561 + 625$$

$$x + y = 14$$

$$9 + 5$$

$$xy = 45$$

$$9 \times 5$$

$$9^4 = 81^2 = 6561$$

47. If $x + y = 10$ and $xy = 4$, then what is the value of $x^4 + y^4$?

यदि $x + y = 10$ और $xy = 4$ है, तो $x^4 + y^4$ का मान क्या है?

(SSC CGL Mains 2017)

[A] 8464

[B] 8432

[C] 7478

[D] 6218

$$x^2 + y^2 = 10^2 - 2 \times 4 = 92$$

$$\begin{aligned} x^4 + y^4 &= (x^2 + y^2)^2 - 2(xy)^2 \\ &= 92^2 - 2 \times 4^2 \\ &= 8464 - 32 \\ &= 8432 \end{aligned}$$

48. If $x = 1 - y$ & $x^2 = 2 - y^2$, then $x^4 + y^4 = ?$

यदि $x = 1 - y$ और $x^2 = 2 - y^2$, तो $x^4 + y^4 = ?$

[A] $9/2$

[B] $3/2$

[C] $7/2$

[D] $5/2$

$$x + y = 1$$

$$x^2 + y^2 = 2$$

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

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

$$= 4 - 2 \times \frac{1}{4} = \frac{7}{2}$$

$$(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2 \checkmark$$

$$(a + b)^3 = a^3 + b^3 + 3ab(a + b) \checkmark$$

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

$$a^3 + b^3 = (a + b) \cdot [(a + b)^2 - 3ab]$$

$$a^3 + b^3 = (a + b) \cdot (a^2 + b^2 - ab)$$

$$\frac{a^3 + b^3}{a + b} = a^2 + b^2 - ab$$

$$\frac{a^3 + b^3}{a^2 + b^2 - ab} = a + b$$

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

$$\begin{aligned} a+b &\checkmark \\ ab &\checkmark \\ a^3+b^3 &=? \end{aligned}$$

(V.V.V imp)

$$(a - b)^3 = a^3 - b^3 - 3a^2b + 3ab^2 \checkmark$$

$$(a - b)^3 = a^3 - b^3 - 3ab(a - b) \checkmark$$

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

V.V.V imp

$$a^3 - b^3 = (a - b) \cdot [(a - b)^2 + 3ab]$$

$$a^3 - b^3 = (a - b) \cdot (a^2 + b^2 + ab)$$

$$\frac{a^3 - b^3}{a^2 + ab + b^2} = (a - b)$$

$$- \times - = +$$

49. If $a^3 + b^3 = 5824$ and $a + b = 28$, then $(a - b)^2 + ab$ is equal to:

यदि $a^3 + b^3 = 5824$ और $a + b = 28$ है, तो $(a - b)^2 + ab$ किसके बराबर है?

(SSC CPO 2019)

[A] 208 ✓

[C] 180

[B] 152

[D] 236

$$a^2 + b^2 - ab = \frac{a^3 + b^3}{a + b}$$

$$= \frac{5824}{28}$$

$$= 208$$

50. If $a^3 + b^3 = 432$ and $a + b = 12$, then $(a + b)^2 - 3ab$ is equal to:

यदि $a^3 + b^3 = 432$ और $a + b = 12$ है, तो $(a + b)^2 - 3ab$ किसके बराबर है?

(SSC CGL 2018 PRE)

[A] 42

[C] 36

[B] 52

[D] 38

$$a^2 + b^2 - ab = \frac{432}{12} = 36$$

51. If $a^3 - b^3 = 899$ and $a - b = 31$, then $(a - b)^2 + 3ab$ is equal to:
यदि $a^3 - b^3 = 899$ तथा $a - b = 31$, तो $(a - b)^2 + 3ab$ का माना है:

(SSC CPO 2019)

[A] 35

[C] 16

[B] 31

[D] 29

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2) = 899$$
$$a^2 + ab + b^2 = \frac{899}{31}$$

52. If $a^3 - b^3 = 2349$ and $(a - b) = 9$, then $(a + b)^2 - ab$ is equal to :

यदि $a^3 - b^3 = 2349$ और $(a - b) = 9$ है, तो $(a + b)^2 - ab$ का मान ज्ञात करें।

[A] 261 ✓

[B] 280

[C] 229

[D] 244

53. Which of the options below is equivalent to $27x^3 + 343y^3 + 189x^2y + 441xy^2$?
नीचे दिए गए विकल्पों में से कौन-सा, $27x^3 + 343y^3 + 189x^2y + 441xy^2$ के तुल्य है?

RRB NTPC GRADUATE LEVEL CBT-2 (2026)

[A] $(3x + 10y)^3$

[B] $(5x + 7y)^3$

[C] $(7x + 3y)^3$

[D] $(3x + 7y)^3$

$(3x + 7y)^3$



$$(3a)^3 - (\sqrt{2}b)^3$$

$$\sqrt{ae}^2 = ae$$

$$\sqrt{ae}^3 = ae\sqrt{ae}$$

54. The value of $27a^3 - 2\sqrt{2}b^3$ is equal to:-
 $27a^3 - 2\sqrt{2}b^3$ का मान के बराबर है।
(SSC CGL 2019 PRE)

[A] $(3a - \sqrt{2}b)(9a^2 - 2b^2 + 6\sqrt{2}ab)$

[B] $(3a - \sqrt{2}b)(9a^2 + 2b^2 + 6\sqrt{2}ab)$

[C] $(3a - \sqrt{2}b)(9a^2 + 2b^2 + 3\sqrt{2}ab)$

[D] $(3a - \sqrt{2}b)(9a^2 - 2b^2 - 3\sqrt{2}ab)$

55. **Simplify the given expression/दिए गए व्यंजक को सरल कीजिए।**

$$(5x + 8y) \cdot (25x^2 + 64y^2 - 40xy)$$

(SSC CGL PRE 2022)

[A] $125x^3 - 51y^3$

[B] $25x^3 + 64y^3$

[C] $125x^3 + 512y^3$

[D] $25x^3 - 64y^3$


$$(5x)^3 + (8y)^3$$

56. The product $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$ is equal to:

गुणनफल $(a + b)(a - b)(a^2 - ab + b^2)(a^2 + ab + b^2)$ निम्नलिखित में से किसके बराबर है?

(RRB TECHNICIAN GRADE-3 2024)

[A] $a^3 - b^3$

[B] $a^3 + b^3$

[C] $a^6 + b^6$

☒ [D] $a^6 - b^6$

$$\begin{aligned} & (a^3 + b^3)(a^3 - b^3) \\ &= (a^3)^2 - (b^3)^2 \end{aligned}$$

57. Find the factorization of $(64x^6 - y^6)$!

$(64x^6 - y^6)$ का गुणनखंड ज्ञात कीजिए!

[RRB Group D-2022]

[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] $(2x - y)(2x + y)(4x^2 + 2xy + y^2)(4x^2 - 2xy + y^2)$ ✓

$$(8x^3)^2 - (y^3)^2 = (8x^3 - y^3)(8x^3 + y^3)$$

58. **Simplify the given expression/दिए गए व्यंजक को सरल करें।**

$$\frac{\cancel{z}(x^3 - y^3)}{x^2 + xy + y^2} + \frac{\cancel{x}(y^3 - z^3)}{y^2 + yz + z^2} + \frac{y(z^3 - x^3)}{z^2 + zx + x^2}$$

RRB Group D-2022

[A] $x - y - z$

[B] $x^2 + y^2 + z^2$

✓ [C] 0

[D] $x + y + z$

$$z \cdot (x - y) + x(y - z) + y(z - x)$$

$$\cancel{zx} - \cancel{zy} + \cancel{xy} - \cancel{xz} + \cancel{yz} - \cancel{yx}$$

0

59. If $a = \frac{b^2}{(b-a)}$, then find the value of $a^3 + b^3$.

यदि $a = \frac{b^2}{(b-a)}$ है, तो $a^3 + b^3$ का मान ज्ञात कीजिए।

[RRB NTPC - 2021]

☒ [A] 0

[C] 2

[B] 6

[D] 1

$$b - a^2 = b^2$$

$$a^2 - ab + b^2 = 0$$

$(a+b) \times 0$

60. **Simplify the given expression./** दिए गए व्यंजक को सरल कीजिए।

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

RRB Group D-2022

[A] x^3

[B] $6x^3$

[C] $8x^3$

[D] $4x^3$

$$[(x-y) + (x+y)]^3$$

61. If $a + b = 4$ and $ab = 3$, find the value of $a^3 + b^3$.

यदि $a + b = 4$ और $ab = 3$ है, तो $a^3 + b^3$ का मान ज्ञात कीजिए।

³⁺¹
(RRB NTPC GRADUATE LEVEL 2025) ^{3X} ²⁷⁺¹

[A] 38

[B] 36

[C] 32

[D] 28 ✓

62. If $A + B = 12$ and $AB = 17$, what is the value of $A^3 + B^3$?
 यदि $A + B = 12$ और $AB = 17$ है, तो $A^3 + B^3$ का मान क्या होगा?

(SSC CGL 2019 PRE)

[A] 1116

[C] 1166

[B] 1106

[D] 1213

$$A^3 + B^3 = (A+B) \times [(A+B)^2 - 3AB]$$

$$= 12 \times (144 - 51)$$

$$= 12 \times 93 = 1116$$

63. If $a + b = 48$ and $ab = 56$, then find the value of $a^3 + b^3$.

यदि $a + b = 48$ और $ab = 56$ है, तो $a^3 + b^3$ का मान ज्ञात कीजिए।

[RRB Group D-2022]

$$= 48 \times (48^2 - 3 \times 56)$$

[A] 1,20,825

[B] 1,02,258

[C] 1,02,258

[D] 1,20,528

8

64. If $(a + b) = 16$ and $a^3 + b^3 = 1456$, then what is the value of ab ?

अगर $(a + b) = 16$ और $a^3 + b^3 = 1456$ है, तो ab का मान क्या होगा?

(RRB NTPC 12TH LEVEL CBT-1 2025)

[A] 50

[B] 48

[C] 64

☒ [D] 55

$$\cancel{ab = 165}$$

$$55$$

$$a^3 + b^3 = (a + b) \cdot [(a + b)^2 - 3ab]$$

$$\cancel{1456 = 16 \times (256 - 3ab)}$$

$$3ab = 256 - 91$$

65. If the sum of two numbers p and m is 12 and $(p^3 + m^3) = 360$, find the value of pm .
 यदि दो संख्याओं p और m का योगफल 12 है तथा $(p^3 + m^3) = 360$ है, तो pm का मान ज्ञात कीजिए।

(RRB NTPC GRADUATE LEVEL CBT-1, 2025)

[A] 28

[B] 44

[C] 38

[D] 35

$$p + m = 12$$

~~$$12 \cdot (12^2 - 3pm) = 360$$~~

~~$$144 = 3pm$$~~

$$38 = pm$$

66. If $(a + b) = 16$ and $a^3 + b^3 = 1456$, then what is the value of ab ?
यदि $(a + b) = 16$ and $a^3 + b^3 = 1456$, तो ab का मान क्या है?

SSC CHSL TIER – I 2022

[A] 50

[B] 48

[C] 64

[D] 55

67. If $a^3 + b^3 = 218$ and $a + b = 2$, then the value of $\frac{1}{a} + \frac{1}{b}$ is :

यदि $a^3 + b^3 = 218$ और $a + b = 2$ है, तो $\frac{1}{a} + \frac{1}{b}$ का मान है:

(SSC CGL Mains 2018)

[A] $\frac{2}{35}$

[C] $\frac{1}{17}$

[B] $-\frac{2}{35}$

[D] $-\frac{1}{12}$

$$\frac{b+a}{ab} = \frac{2}{-35}$$

~~$$2 \times (2^3 - 3ab) = 218$$~~

~~$$-3ab = 105$$~~

$$ab = -35$$

68. If $a + b = 24$ and $a^2 + b^2 = 320$ then find the value of, $(a^3 + b^3)$.

अगर, $a + b = 24$ और $a^2 + b^2 = 320$, तो $(a^3 + b^3)$ का मान ज्ञात कीजिए।

SSC CHSL PRE 2025

[A] 4608

[C] 3890

[B] 4567

[D] 4112

$$= (a+b) \cdot [(a+b)^2 - 3ab]$$

$$= 24 \times [576 - 384]$$

$$= 24 \times 192$$

$$ab = \frac{24^2 - 320}{2}$$

$$= 192$$

69. If $u - v = 4$ and $uv = 20$, then find the value of $u^3 - v^3$.

यदि $u - v = 4$ और $uv = 20$ है, तो $u^3 - v^3$ का मान ज्ञात करें।

[RRB Group D-2022]

[A] 224

[B] 304

[C] 64

[D] 176