

80. If $x - y = 25$ and $xy = 444$, compute the value of $x^3 - y^3$.
यदि $x - y = 25$ और $xy = 444$ है, तो $x^3 - y^3$ के मान की गणना करें।

SSC CPO 2024

[A] 48925 ✓

[C] 28495 ✗

[B] 42985 ✗

[D] 26725 ✗

$$x^3 - y^3 = (x - y) \cdot [(x - y)^2 + 3xy]$$

$$= 25 \times [25^2 + 3 \times 444]$$

$$= 25 \times 1957$$

$$\begin{array}{r} 625 \\ +13325 \\ \hline \end{array}$$

81. If $x - y = 8$ and $xy = 5$ what is the value of, $x^3 - y^3 + 8(x + y)^2$.
यदि $x - y = 8$ और $xy = 5$ है, तो $x^3 - y^3 + 8(x + y)^2$ का मान क्या होगा?

SSC CHSL PRE 2025

[A] 1256

[C] 3456

[B] 1304

[D] 3245

$$8 \times 79 + 8 \times 84 = 8 \times 163$$

$$\begin{aligned} x^3 - y^3 &= 8x(8^2 + 3 \times 5) \\ &= 8 \times 79 \end{aligned}$$

$$\begin{aligned} (x+y)^2 &= (x-y)^2 + 4xy \\ &= 64 + 4 \times 5 \\ &= 84 \end{aligned}$$

82. If $(22 - m)(m - 19) = 5$, then find $(m - 19)^3 + (22 - m)^3$?

यदि $(22 - m)(m - 19) = 5$ है, तो $(m - 19)^3 + (22 - m)^3$ ज्ञात कीजिये?

[A] -18

[C] 20

$$b \cdot a = 5$$

$$a \cdot b = 5$$

[B] 18

[D] -20

$$\begin{aligned} a^3 + b^3 &= 3 \times (3^2 - 3 \times 5) \\ &= 3 \times -6 = -18 \end{aligned}$$

माना

$$m - 19 = a$$

$$22 - m = b$$

अब

$$a + b = 3$$



#



83. If $xy = -6$ & $x^3 + y^3 = 19$ (x and y are integers), then what is the value of $\frac{1}{x^{-1}} + \frac{1}{y^{-1}}$?

यदि $xy = -6$ & $x^3 + y^3 = 19$ (x और y पूर्णांक हैं), तो $\frac{1}{x^{-1}} + \frac{1}{y^{-1}}$ का मान क्या है?

[A] 2

[C] -1

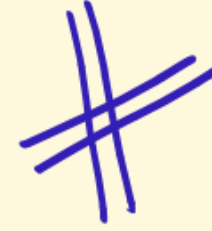
[B] 1

[D] -2

$$x + y = 3 - 2$$

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

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



84. 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

$ab = 55$

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

$$\overset{91}{1456} = \overset{16}{16} \cdot [256 - 3ab]$$

$$3ab = 256 - 91$$

$$3ab = 165$$

85. 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] $-\frac{1}{12}$

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

$\frac{109}{218} = \frac{1}{2} \times [2^2 - 3ab]$

$109 = -3ab$

$-35 = ab$

86. If $3a + 2b = 27$ and $27a^3 + 8b^3 = 1458$, then find $2ab$.

यदि $3a + 2b = 27$ और $27a^3 + 8b^3 = 1458$, तो $2ab$ का मान ज्ञात कीजिए।

[A] 72

[B] 70

[C] 77

[D] 75

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

$$\overset{54}{\cancel{1458}} = \cancel{27} \times (729 - 18ab)$$

$$18ab = 729 - 54$$

$\div 9$

$$2ab = 81 - 6 = 75$$

87. If $5x + 9y = 5$ and $125x^3 + 729y^3 = 120$ then the value of the product of x and y ?
यदि $5x + 9y = 5$ तथा $125x^3 + 729y^3 = 120$ है तो x और y का गुणनफल होगा ?

[A] $1/9$

[B] $1/135$

[C] $1/45$

[D] $1/75$

$xy = ?$


$$\frac{24}{120} = 5x [5^2 - 3 \times 5x \times 9y]$$

$$-1 = -135xy$$

$$\frac{1}{135} = xy$$

88. If $a - b = 27$ and $a^3 - b^3 = 5427$, then the value of ab will be:

यदि $a - b = 27$ और $a^3 - b^3 = 5427$, तो ab का मान होगा:

[A] -176

[B] -110

[C] -152

[D] -140

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

$$\cancel{5427} = \cancel{27} \cdot [\cancel{729} + 3ab]$$

$$-528 = 3ab$$

$$-176 = ab$$

89. If $\frac{64}{27}a^3 - \frac{125}{64}b^3 = 387$ & $\frac{4}{3}a - \frac{5}{4}b = 3$, then find $10ab$?

यदि $\frac{64}{27}a^3 - \frac{125}{64}b^3 = 387$ & $\frac{4}{3}a - \frac{5}{4}b = 3$ है, तो $10ab$ ज्ञात कीजिये?
 $= 240$

[A] 210

[B] 220

[C] 230

[D] 240

$$\left(\frac{4a}{3}\right)^3 - \left(\frac{5b}{4}\right)^3 = 387$$

~~$$3 \times \left[3^2 + 3 \times \frac{4a}{3} \times \frac{5b}{4} \right] = 387$$~~

$$5ab = 120$$



90. If $x + y = 11$ and $x^2 + y^2 = 65$, then the value of $x^3 + y^3$ will be:

यदि $x + y = 11$ और $x^2 + y^2 = 65$, तो $x^3 + y^3$ का मान होगा:

[A] ~~407~~

[B] 389

[C] 413

[D] 421

$343 + 64$
 $= 407$

91. If $x + y = 13$ and $x^2 + y^2 = 101$, then the value of $x^3 + y^3$ will be:

यदि $x + y = 13$ और $x^2 + y^2 = 101$, तो $x^3 + y^3$ का मान होगा:

[A] 767

[B] 949

[C] 793

[D] 871

$$(x+y) \cdot [(x+y)^2 - 3xy]$$

$$xy = \frac{13^2 - 101}{2} = 34$$

$$= 13 \times (169 - 3 \times 34)$$

$$= 13 \times 67$$

92. If $a + b = \frac{7}{3}$, $a^2 + b^2 = \frac{31}{9}$, then find $27(a^3 + b^3) = ?$
यदि $a + b = \frac{7}{3}$, $a^2 + b^2 = \frac{31}{9}$, तो $27(a^3 + b^3)$ ज्ञात कीजिए।

[A] 117

[C] 126

[B] 154

[D] 168

$$\cancel{27}^9 \times \frac{7}{3} \cdot \left[\frac{49}{9} - 3 \times 1 \right]$$

$$\begin{aligned} ab &= \frac{\frac{49}{9} - \frac{31}{9}}{2} \\ &= \frac{2}{2} \\ &= 1 \end{aligned}$$

$$\begin{aligned} &\cancel{63}^7 \times \frac{22}{3} \\ &= 154 \end{aligned}$$

93. If $x^2 + y^2 = 45$ and $x - y = 5$ then what is the value of $x^3 - y^3$?

यदि $x^2 + y^2 = 45$ और $(x - y)^2 = 5^2$ है, तो $x^3 - y^3$ का मान ज्ञात करें।

[A] 150

[B] 250

[C] -25

[D] 275

$$(x-y) \cdot [(x-y)^2 + 3xy]$$

$$45 - 2xy = 25$$

$$2xy = 20$$

$$xy = 10$$

$$= 5 \times (25 + 30) \\ = 275$$

94. If $a^2 + b^2 = 95$ and $ab = 13$, ($a > 0, b > 0$) then the value of $(a^3 + b^3)$ is:

यदि $a^2 + b^2 = 95$ और $ab = 13$, ($a > 0, b > 0$) है तो $(a^3 + b^3)$ का मान है:

[A] 861

[B] 968

[C] 1100

☒ [D] 902

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

$$(a+b)^2 = 95 + 2 \times 13 = 121$$

$$a+b = 11$$

$$= 11 \times (121 - 39)$$

$$= 11 \times 82$$

$$= 902$$

95. If $a^2+b^2=135$ and $ab=7$, ($a>0$, $b>0$) then the value of (a^3-b^3) is:

यदि $a^2+b^2=135$ और $ab=7$, ($a>0$, $b>0$) है तो (a^3-b^3) का मान है:

[A] 1562

[B] 1408

[C] 1420

[D] 1350

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

$$(a-b)^2 = 135 - 2 \times 7 = 121$$

$$a-b=11$$

$$11 \times (121 + 21) \\ = 11 \times 142$$

96. If $x + y = 17$ and $xy = 25$, $x > y$, then the value of $(x^3 - y^3)$ is:

यदि $x + y = 17$ और $xy = 25$, $x > y$, है, तो $(x^3 - y^3)$ का मान है?

☒ [A] $792\sqrt{21}$

[B] $702\sqrt{21}$

[C] $724\sqrt{23}$

[D] none

$$= \sqrt{189} \times (189 + 3 \times 25)$$

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

$$= \sqrt{289 - 100}$$

$$= \sqrt{189}$$

$$= 3\sqrt{21} \times 264$$
$$= 792\sqrt{21}$$

$$\sqrt{9 \times 21}$$

97. If $x + y = 14$ and $x^3 + y^3 = 1064$, then the value of $x^2 - y^2$ will be: ($x > y$)

यदि $x + y = 14$ और $x^3 + y^3 = 1064$ है, तो $x^2 - y^2$ का मान होगा: ($x > y$)

[A] 84

[C] 70

[B] 112

[D] 78

$10 + 4$

$1000 + 64$

$= 100 - 16$

98. If $a^3 - b^3 = 602$ & $a - b = 2$, then find the value of $(a^2 + b^2)$?
यदि $a^3 - b^3 = 602$ & $a - b = 2$, तो $(a^2 + b^2)$ का मान ज्ञात कीजिए?
(IB ACIO GRADE-2 2023)

[A] 156

[B] 240

[C] 202

[D] 260

$$\overset{301}{602} = 2 \times (2^2 + 3ab)$$

$$297 = 3ab$$

$$99 = ab$$

11x9

99. If $a - b = 4$ and $a^3 - b^3 = 88$, then find the value of $a^2 - b^2$.

यदि $a - b = 4$ और $a^3 - b^3 = 88$ है, तो $a^2 - b^2$ का मान क्या होगा?

[A] $6\sqrt{6}$

[B] $9\sqrt{6}$

[C] $7\sqrt{6}$

[D] $8\sqrt{6}$

$$(a-b) \cdot (a+b)$$

$$\downarrow \quad \downarrow$$
$$4 \times 2\sqrt{6}$$
$$= 8\sqrt{6}$$

$$a^3 - b^3 = 88$$

$$4 \times (4^2 + 3ab) = 88$$

$$3ab = 6$$

$$ab = 2$$

$$(a+b) = \sqrt{(a-b)^2 + 4ab}$$

$$= \sqrt{16 + 8}$$

$$= \sqrt{24}$$

$$= 2\sqrt{6}$$

100. If $x^3 = 116 + y^3$ and $x = 4 + y$, then find $(x + y)$? (given that $x > 0$ and $y > 0$):

यदि $x^3 = 116 + y^3$ और $x = 4 + y$ है, तो $(x + y)$ ज्ञात कीजिए। (दिया गया है कि $x > 0$ और $y > 0$ है)

[A] $\frac{15}{\sqrt{6}}$

[B] $\frac{10\sqrt{3}}{7}$

[C] $10\sqrt{3}$

[D] $\frac{10}{\sqrt{3}}$ ✓

$$x^3 - y^3 = 116$$

$$x - y = 4$$

$$\cancel{4x(4^2 + 4xy)} = \cancel{116}$$

$$3xy = 13$$

$$xy = \frac{13}{3}$$

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

$$= \sqrt{16 + \frac{52}{3}}$$

$$= \sqrt{\frac{100}{3}}$$

101. If $2x + 3y = 4$ and $4x^2 + 9y^2 = 64$, then what is the value of $8x^3 + 27y^3$.

यदि $(2x + 3y)^2 = 4$ और $4x^2 + 9y^2 = 64$, तो $8x^3 + 27y^3$ का मान क्या है?

[A] 352

[B] 325

[C] 235

[D] 253

~~$64 + 2 \times 2x \times 3y = 16$~~

~~$12xy = -48$~~

~~$xy = -4$~~

~~$(2x)^3 + (3y)^3 = (2x + 3y) \cdot (2x + 3y)^2 - 18xy$~~

~~$= 4 \cdot [16 + 72]$~~

~~$= 4 \times 88$~~

~~$= 352$~~

102. If $16x^2 + y^2 = \frac{65}{36}$ and $xy = \frac{1}{18}$, $x, y > 0$, then what is the value of $(64x^3 + y^3)$?

यदि $16x^2 + y^2 = \frac{65}{36}$ और $xy = \frac{1}{18}$, $x, y > 0$ है, तो $(64x^3 + y^3)$ का मान क्या होगा?

[A] $\frac{19}{4}$

[B] $\frac{27}{4}$

[C] $\frac{27}{8}$

[D] $\frac{19}{8}$

$$(4x)^3 + (y)^3 = \frac{3}{2} \cdot \left[\frac{9}{4} \times \frac{19}{18} \right]$$

$$(4x + y)^2 = \frac{65}{36} + 8 \times \frac{1}{18} = \frac{81}{36}$$

$$4x + y = \frac{9}{6} = \frac{3}{2}$$

$$= \frac{3}{2} \times \frac{19}{12} = \frac{19}{8}$$

103. If $25a^2 + 4b^2 = 124$, $ab = 3$ then $125a^3 - 8b^3 = ?$

यदि $25a^2 + 4b^2 = 124$ और $ab = 3$ है, तो $125a^3 - 8b^3 = ?$

[A] 1322

[B] 1264

[C] 1232

[D] 1268

$$(5a - 2b)^2 = 124 - 20 \times 3 = 64$$

$$5a - 2b = 8$$

$$\begin{aligned}(5a)^3 - (2b)^3 &= 8 \times (8^2 + 3 \times 8) \\ &= 8 \times 154 \\ &= 1232\end{aligned}$$

104. If $(4a-3b)=1$, $ab=\frac{1}{2}$, where $a > 0$ and $b > 0$, what is the value of $(64a^3 + 27b^3)$?

यदि $(4a-3b)=1$, $ab=\frac{1}{2}$, जहाँ $a > 0$ और $b > 0$ है, तो $(64a^3 + 27b^3)$ का मान क्या है?

[A] 15

[B] 25

[C] 30

[D] 35

$$(4a)^3 + (3b)^3 = 5 \times (25 - 36 \times \frac{1}{2})$$

$$= 35$$

$$(4a+3b)^2 = (4a-3b)^2 + 4 \times 4a \times 3b$$

$$(4a+3b)^2 = 1 + 4 \times 4 \times \frac{1}{2} = 25$$

$$4a+3b=5$$