

153. If $\sqrt{x^2 + 3x + 38} + \sqrt{x^2 + 3x - 17} = 11$ then, find $\sqrt{x^2 + 3x + 38} - \sqrt{x^2 + 3x - 17} = ?$

यदि $\sqrt{x^2 + 3x + 38} + \sqrt{x^2 + 3x - 17} = 11$ है, तो $\sqrt{x^2 + 3x + 38} - \sqrt{x^2 + 3x - 17}$ ज्ञात कीजिए।

[A] 4

[B] 5

[C] 6

[D] 7



×

$$\sqrt{x^2 + 3x + 38} + \sqrt{x^2 + 3x - 17} = 11$$

$$\sqrt{x^2 + 3x + 38} - \sqrt{x^2 + 3x - 17} = K \text{ (माना)}$$

$$(\cancel{x^2 + 3x} + 38) - (\cancel{x^2 + 3x} - 17) = 11 \times K$$

$$55 = 11 \times K$$

$$5 = K$$

154. If $\sqrt{8x^3 + 53x^2 - 71x + 60} + \sqrt{8x^3 + 53x^2 - 71x - 93} = 17$, then find

$\sqrt{8x^3 + 53x^2 - 71x + 60} - \sqrt{8x^3 + 53x^2 - 71x - 93} = ?$

✗ यदि $\sqrt{8x^3 + 53x^2 - 71x + 60} + \sqrt{8x^3 + 53x^2 - 71x - 93} = 17$, है, तो

$\sqrt{8x^3 + 53x^2 - 71x + 60} - \sqrt{8x^3 + 53x^2 - 71x - 93} = K$ (माना)

[A] 8

[B] 7

[C] 10

[D] 9

~~$60 - (-93) = 17 \times K$~~

$J = K$

155. If $\sqrt[3]{t+40} - \sqrt[3]{t-20} = 5$, then $\sqrt[3]{(t+40)^2} + \sqrt[3]{(t-20)^2} + \sqrt[3]{(t+40)(t-20)} = ?$

यदि $\sqrt[3]{t+40} - \sqrt[3]{t-20} = 5$ है, तो $\sqrt[3]{(t+40)^2} + \sqrt[3]{(t-20)^2} + \sqrt[3]{(t+40)(t-20)} = ?$

[A] 14

[B] 12

[C] 10

[D] 18

$$\sqrt[3]{t+40} - \sqrt[3]{t-20} = 5$$

×

×

$$\left(\sqrt[3]{t+40}\right)^3 + \left(\sqrt[3]{t-20}\right)^3 + \sqrt[3]{(t+40)(t-20)} = k \text{ (माना)}$$

$$\cancel{(t+40)} - \cancel{(t-20)} = 5 \times k$$

$$60 = 5k$$

$$12 = k$$



156. Find the value of $\frac{m(m^2+3m+3)+1}{m(m+2)+1}$ when $m = 87$.

यदि $m = 87$ है, तो $\frac{m(m^2+3m+3)+1}{m(m+2)+1}$ का मान ज्ञात कीजिए।

[A] 88

[B] 87

[C] 90

[D] 96

$$\begin{aligned} & \frac{m^3 + 3m^2 + 3m + 1}{m^2 + 2m + 1} \\ &= \frac{(m+1)^3}{(m+1)^2} = m+1 = 88 \end{aligned}$$

157. If $p = 999$, then the value of $\sqrt[3]{p(p^2 + 3p + 3)} + 1$ is.

यदि $p = 999$ है, तो $\sqrt[3]{p(p^2 + 3p + 3)} + 1$ का मान है।

[A] 1000

[D] 999

[C] 998

[D] 1002

$$\sqrt[3]{p^3 + 3p^2 + 3p + 1}$$

$$= \sqrt[3]{(p+1)^3}$$

$$= p+1$$

$$= 1000$$

158. If $p = 127$, then the value of $\sqrt[3]{p(p^2 - 6p + 12)} - 8$ is.

यदि $p = 127$ है, तो $\sqrt[3]{p(p^2 - 6p + 12)} - 8$ का मान है।

[A] 5

[B] 125

[C] 129

[D] 25

$$= \sqrt[3]{p^3 - 6p^2 + 12p - 8}$$

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

$$= p-2 = 125$$



#



159. If $x + y = 14$, then the value of $x^3 + y^3 + 42xy$ is:

यदि $x + y = 14$ है, तो $x^3 + y^3 + 42xy$ का मान है।

(SSC CPO 2025)

☒ [A] 2744

[C] 2742

[B] 2644

[D] 2714

$$x^3 + y^3 + 3xy \times 14 = 2744$$

160. If $x = \sqrt{2} + 1$ and $y = \frac{\sqrt{2}}{3}$, then what is the value of $(x-2y-1)(x^2+4y^2+2xy-2x-2y+1)$?

यदि $x = \sqrt{2} + 1$ और $y = \frac{\sqrt{2}}{3}$ है, तो $(x-2y-1)(x^2+4y^2+2xy-2x-2y+1)$ का मान क्या है?

[A] $\frac{38\sqrt{2}}{27}$

[B] $\frac{4\sqrt{2}}{3}$

[C] $\frac{13\sqrt{2}}{9}$

[D] $\frac{40\sqrt{2}}{27}$

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

$\left(\frac{2\sqrt{2}}{3}\right)^3$

$$= \{(x-1)-2y\} [(x-1)^2 + (2y)^2 + 2y(x-1)]$$

$$= (x-1)^3 - (2y)^3$$

$$= 2\sqrt{2} - \frac{16\sqrt{2}}{27}$$

$$= \frac{38\sqrt{2}}{27}$$

MISC



161. If $4x + 3a = 0$ then what is the value of $\frac{x^2+ax+a^2}{x^3-a^3} - \frac{(x^2-ax+a^2)}{x^3+a^3}$?

यदि $4x + 3a = 0$ तो $\frac{x^2+ax+a^2}{x^3-a^3} - \frac{(x^2-ax+a^2)}{x^3+a^3}$ का मान क्या होगा?

[A] $-\frac{32}{7a}$

[C] $-\frac{4}{7a}$

[B] $\frac{7}{a}$

[D] $\frac{24}{7a}$

$$x = -\frac{3a}{4}$$

$$\frac{1}{x-a} - \frac{1}{x+a}$$

$$= \frac{2a}{x^2 - a^2}$$

$$\frac{x^3 - a^3}{x^2 + ax + a^2} = (x - a)$$

$$= \frac{2a}{\frac{x^3 - a^3}{16} - a^2} = \frac{32a}{-7a^2} = -\frac{32}{7a}$$

162. If $x^2 = 17x + y$, $y^2 = x + 17y$ and $x \neq y$, then find $\sqrt{x^2 + y^2 + 1}$?

यदि $x^2 = 17x + y$, $y^2 = x + 17y$ और $x \neq y$, तो $\sqrt{x^2 + y^2 + 1}$ ज्ञात कीजिये?

[A] 15

[B] 16

[C] 17 ✓

[D] 18

$x \neq y \neq 0$

$$= \sqrt{18 \times 16 + 1}$$

$$= \sqrt{17^2 - \cancel{1}^2 + 1}$$
$$= 17$$

$$x^2 + y^2 = 18 \times 16$$

$$x^2 - y^2 = 16x - 16y$$

$$(\cancel{x-y}) \cdot (x+y) = 16 \cdot (\cancel{x-y})$$

$$x+y=16$$

163. If x and y be two positive real numbers such that, $x + y = 19, xy = 9$, then find $x\sqrt{y} + y\sqrt{x}$?
यदि x और y दो धनात्मक वास्तविक संख्याएँ हैं, $x + y = 19, xy = 9$, तो $x\sqrt{y} + y\sqrt{x}$ ज्ञात कीजिए?

[A] 10

[C] 15

[B] 12

[D] 21

$$= \sqrt{xy} \cdot (\sqrt{x} + \sqrt{y})$$

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

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

$$(\sqrt{x} + \sqrt{y})^2 = x + y + 2\sqrt{xy}$$
$$= 19 + 2 \times \sqrt{9} = 25$$

$$= 3 \times (\sqrt{x} + \sqrt{y})$$

$$= 3 \times 5$$

$$= 15$$

164. Let a and b be two positive real numbers such that $a\sqrt{a} + b\sqrt{b} = 32$ and $a\sqrt{b} + b\sqrt{a} = 31$. What is the value of $\frac{5(a+b)}{7}$?

मान लीजिए a और b दो धनात्मक वास्तविक संख्याएँ हैं, इस प्रकार कि $a\sqrt{a} + b\sqrt{b} = 32$ और $a\sqrt{b} + b\sqrt{a} = 31$ है। तो $\frac{5(a+b)}{7}$ का मान क्या है?

(CDS 2019)

[A] 5

[C] 9

[B] 7

[D] Cannot be determined

$$= \frac{5 \times 62}{7} = 9$$

$$\sqrt{a}^3 + \sqrt{b}^3 = 32$$

$$\sqrt{ab}(\sqrt{a} + \sqrt{b}) = 31$$

$$\sqrt{ab} = \frac{31}{5}$$

$$\begin{aligned} a+b &= 25 - \frac{62}{5} \\ &= \frac{63}{5} \end{aligned}$$

$$(\sqrt{a} + \sqrt{b})^3 = \sqrt{a}^3 + \sqrt{b}^3 + 3\sqrt{ab}(\sqrt{a} + \sqrt{b})$$

$$= 32 + 3 \times 31 = 125$$

$$(\sqrt{a} + \sqrt{b})^2 = 5^2$$

$$a+b + 2 \times \frac{31}{5} = 25$$

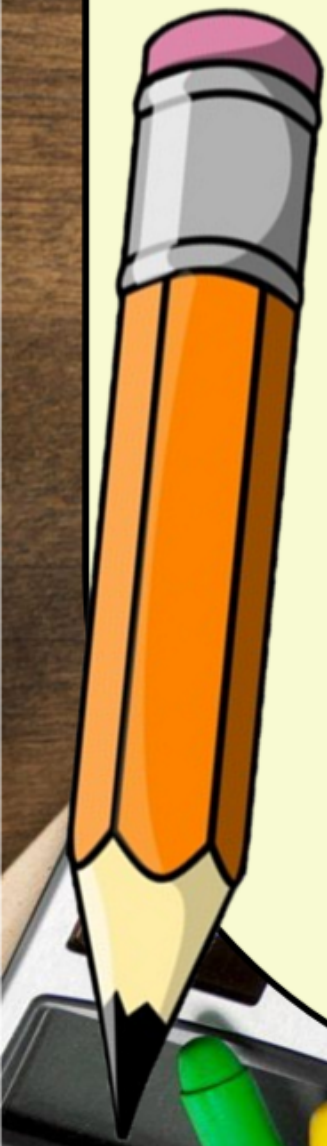
165. The product of two positive numbers is 616. If the ratio of the difference of their cubes to the cube of their difference is $157 : 3$, then the sum of the two numbers is.
दो धनात्मक संख्याओं का गुणनफल 616 है। यदि उनके घनों के अंतर का उनके अंतर के घन का अनुपात $157 : 3$ है, तो दो संख्याओं का योग है?

[A] 85

[B] 58

[C] 95

[D] 50



166. If $a + b = 1$ and $a^2 + b^2 = 2$ and then find $a^5 + b^5 = ?$

यदि $a + b = 1$ और $a^2 + b^2 = 2$ तो $a^5 + b^5$ ज्ञात कीजिए?

[A] $\frac{17}{4}$
[C] $\frac{37}{8}$

[B] $\frac{19}{4}$
[D] $\frac{7}{2}$

$$ab = \frac{1^2 - 2}{2} = -\frac{1}{2}$$

$$a^3 + b^3 = 1 \times \left[1^2 - 3 \times \left(-\frac{1}{2}\right) \right] \\ = \frac{5}{2}$$

$$(a^3 + b^3) \cdot (a^2 + b^2) = a^5 + a^3b^2 + b^3a^2 + b^5$$

$$a^5 + b^5 = (a^3 + b^3) \cdot (a^2 + b^2) - a^2b^2(a + b)$$

$$= \frac{5}{2} \times 2 - \frac{1}{4} \times 1$$

$$= \frac{19}{4}$$



50/.

end

