AMANS MATHS BLOGS.COM

JSTSE : PREVIOUS YEARS

(Mathematics : Algebraic Identities)

1. If $x + x^{-1} = 4$ Then $x^3 + \frac{1}{x^3}$ would be **(2012)**

(a) 64 (b) 52

(c) 32 (d) 12

Ans. (b)

2. Value of $(x + y)^{-1} (x^{-1} + y^{-1})$ is **(2013)**

(a) 1 (b) $(x + y)$

(c) $x^{-1} y^{-1}$ (d) $(xy)^{-1} (x + y)^{-1}$

Ans. (c)

3. $\left(\frac{1}{a}\right)^{-3}$, the value of $a^3 + \frac{1}{a^3}$ will be **(2013)**

(a) 0 (b) $-2\sqrt{3}$

(c) $3\sqrt{3}$ (d) $6\sqrt{3}$

AMANS MATHS BLOGS.COM

Ans. (a)

4. If $a + b + c = 0$, then the value of $\frac{(b+c)^2}{bc} + \frac{(c+a)^2}{ca} + \frac{(a+b)^2}{ab}$ is **(2014)**

(a) 0 (b) 1

(c) 2 (d) 3

Ans. (d)

5. If $x^2 - 5x - 1 = 0$, then the value of $x^2 + \frac{1}{x^2}$ is **(2014)**

(a) 20 (b) 27

(c) 25 (d) –25

Ans. (b)

AMANS MATHS BLOGS.COM

6. If $x = 2^{2/3} + 2^{1/3}$, then **(2014)**

(a) $x^3 - 6x - 6 = 0$ (b) $x^3 + 6x - 6 = 0$

(c) $x^3 - 6x + 6 = 0$ (d) $x^3 + 6x + 6 = 0$

Ans. (a)

7. Value of $\frac{1}{1-x} + \frac{1}{1+x} + \frac{2}{1-x^2} + \frac{4}{1-x^4} + \frac{8}{1+x^8}$ is **(2014)**

(a) $\frac{16}{1+x^{16}}$ (b) $\frac{8}{1-x^{16}}$

(c) $\frac{16}{1-x^{16}}$ (d) $\frac{32}{1+x^{16}}$

Ans. (c)

8. If $x + y = 8$, $xy = 15$, then the value of $x^4 + x^2y^2 + y^4$ is **(2014)**

(a) 34 (b) 1156

(c) 931 (d) 1381

Ans. (c)

9. The coefficient of x^2 in the expansion of $(x^2 - x + 1)^2 + (x^2 + x + 1)^2$ is **(2014)**

(a) 6 (b) 5

(c) 4 (d) 3

Ans. (a)

10. If $abc = 1$, then the value of $\frac{1}{1+a+b^{-1}} + \frac{1}{1+b+c^{-1}} + \frac{1}{1+c+a^{-1}}$ is **(2015)**

(a) 0 (b) –1

(c) 1 (d) $1 + a + ab$

Ans. (c)

11. If $x = 3 + 3^{1/3} + 3^{2/3}$, then the value of $x^3 - 9x^2 + 18x - 12$ is **(2015)**

(a) 0 (b) –1

(c) 1 (d) 2

Ans. (a)

154. On simplifying $\left(\frac{1}{2}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{5}{6}\right)^3$ we get **(2011)**

(1) 0 (2) –1

(3) $\frac{-5}{12}$ (4) $\frac{5}{12}$

Ans. (4)

175. if both $(x - 2)$ and $\left(x - \frac{1}{2}\right)$ are factors of $px^2 + 5x + r$ then **(2011)**

(1) P = r (2) P > r

(3) P < r (4) None of these

Ans. (1)

173. Factors of $(3m^2 - 2m)(6 - 3m^2 + 2m) - 5$ are **(2014)**

(1) $(3m + 1)(3m - 5)(m - 1)(m + 1)$ (2) $-(3m + 1)(3m - 5)(m - 1)(m + 1)$

(3) $(3m - 1)(3m + 5)(m - 1)(m + 2)$ (4) $-(3m - 1)(3m - 5)(m - 2)(m + 1)$

Ans. (2)

52. Factors of $(x^4 + x^2 + 1)$ are **(2015)**

(a) $(x^2 + x + 1)(x^2 + x - 1)$ (b) $(x^2 - x + 1)(x^2 + x + 1)$

(c) $(x^2 - x + 1)(x^2 + x - 1)$ (d) $(x^2 + 1)(x^2 - 1)$

Ans. (2)

56. If $3a - 2b + c = 0$, then the value of $9a^2 - 4b^2 + c^2 + 6ac$ is **(2015)**

(a) –1 (b) 1

(c) 2 (d) 0

Ans. (4)