Special Algebra By Alok Sir

Type-1

1. If $2x + \frac{2}{x} = 3$, then the value of $x^3 + \frac{1}{x^3} + 2$ is

(a) $-\frac{9}{8}$

(b) $-\frac{25}{8}$

(c) $\frac{7}{8}$

(d) 11

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Type-1

2. If $x + \frac{1}{x} = p$, then what is $x^6 + \frac{1}{x^6}$ equal to?

(a) $p^6 + 6p$

(b) $p^6 - 6p$

(c) $p^6 + 6p^4 + 9p^2 + 2$

(d) $p^6 - 6p^4 + 9p^2 - 2$

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Type-II

3. If $3x + \frac{1}{2x} = 5$ then the value of $8x^3 + \frac{1}{27x^3}$ is

(a) $118\frac{1}{2}$

(b) $30\frac{10}{27}$

(c) 0

(d) 1

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Type-III

4. If for a non-zero x, $3x^2 + 5x + 3 = 0$, then the value of $x^3 + \frac{1}{x^3}$ is:

(a) $\frac{10}{27}$

(b) $-\frac{10}{27}$

(c) $\frac{2}{3}$

(d) $-\frac{2}{3}$

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Type-III

5. If $x+\frac{1}{x}=5$ then the value of $\frac{x^4+3x^3+5x^2+3x+1}{x^4+1}$ is

(a) $\frac{43}{23}$

(b) $\frac{47}{21}$

(c) $\frac{41}{23}$

(d) $\frac{45}{21}$

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Type-III

6. If $\frac{2p}{p^2 - 2p + 1} = \frac{1}{4}$ then the value of $p + \frac{1}{p}$ is

(a) 10

(b) -10

(c) 15

(d) 6

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Type-III

7. If $x + \frac{2}{x} = 3$ then find $\frac{x^2 + x + 2}{x^2(3 - x)}$ is

(a) 0

(b) 1

(c) 2

(d) 3

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Type-III

8. If $x^2 + \frac{1}{x^2} = 66$ then $\frac{x^2 - 1 + 2x}{x}$ is

(a) ± 8

(b) $10, -6$

(c) -10

(d) ± 4

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Type-IV

9. If $n = 7 + 4\sqrt{3}$ then the value of $\sqrt{n} + \frac{1}{\sqrt{n}}$ is

(a) $2\sqrt{3}$

(b) 4

(c) -4

(d) $-2\sqrt{3}$

Special Algebra By Alok Sir

Type-IV

10. If $x = 3 + 2\sqrt{2}$ then $\frac{x^6 + x^4 + x^2 + 1}{x^3}$ is

(a) 216

(b) 192

(c) 198

(d) 204

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Type-IV

11. If $x = 3 + 2\sqrt{2}$ and $xy = 1$ then the value of $\frac{x^2 + 3xy + y^2}{x^2 - 3xy + y^2}$ is

(a) $\frac{30}{31}$

(b) $\frac{70}{31}$

(c) $\frac{35}{31}$

(d) $\frac{37}{31}$

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Type-IV

12. If $m = \frac{\sqrt{3}+1}{\sqrt{3}-1}$ & $n = \frac{\sqrt{3}-1}{\sqrt{3}+1}$, then the value of $m^2 + n^2$ is

(a) 14

(b) 13

(c) 15

(d) 10

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Type-IV

13. If $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ then $\frac{a^2}{b} + \frac{b^2}{a}$ is

(a) 1030

(b) 970

(c) 1025

(d) 930

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Type-IV

14. If $x = \sqrt{3} - \frac{1}{\sqrt{3}}$ and $y = \sqrt{3} + \frac{1}{\sqrt{3}}$ then $\frac{x^2}{y} + \frac{y^2}{x}$ is

(a) $\sqrt{3}$

(b) $3\sqrt{3}$

(c) $16\sqrt{3}$

(d) $2\sqrt{3}$

Special Algebra By Alok Sir

Type-V

15. If $x\left(3-\frac{2}{x}\right)=\frac{3}{x}$, then find the value of $x^2+\frac{1}{x^2}$

(a) $2\frac{1}{9}$

(b) $2\frac{4}{9}$

(c) $3\frac{1}{9}$

(d) $3\frac{4}{9}$

Special Algebra By Alok Sir

Type-V

16. If $x > 1$ and $x + \frac{1}{x} = 2\frac{1}{12}$ then the value of $x^4 - \frac{1}{x^4}$

(a) $\frac{58975}{20736}$

(b) $\frac{59825}{20736}$

(c) $\frac{57985}{20736}$

(d) $\frac{57895}{20736}$