



MATHS

BOOKS - CALCUTTA BOOK HOUSE MATHS (BENGALI ENGLISH)

FACTORISATION

Examples

1. Factorise : $4x^4 + 81$

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2. Factorise : $\frac{x^4}{16} - \frac{y^4}{81}$

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3. Factorise : $m^2 + \frac{1}{m^2} + 2 - 2m - \frac{2}{m}$

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4. Factorise : $3x(3x + 2z) - 4y(y + z)$

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5. Factorise : $3x^2 + 4xy + y^2 - 2xz - z^2$

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6. Factorise : $x^2 - y^2 - 6ax + 2ay + 8a^2$

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7. Factorise : $a^2 - 9b^2 + 4c^2 - 25d^2 - 4ac + 30bd$



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8. Factorise : $(x^2 - y^2)(a^2 - b^2) + 4abxy$



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9. Factorise : $x^2 - 2x - 22499$



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10. Factorise : $2b^2c^2 + 2c^2a^2 + 2a^2b^2 - a^4 - b^4 - c^4$



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11. Factorise : $x^4 + \frac{1}{x^4} + 1$



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12. Factorise : $(x^2 - 1)(y^2 - 1) - 4xy$

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13. Factorise : $(a^2 - b^2)x^2 - 2ax + 1$

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14. Factorise : $p^2 + 2p - (q + 1)(q - 1)$

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15. Factorise : $x(x - 1) - y(y - 1)$

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16. Factorise : $(a + b + 1)^2 - 4(a + b) - 25$



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17. Factorise : $m^4 + m^2n^2 + n^4$



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18. Factorise : $a^2 - b^2 - c^2 + 2bc$



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19. Factorise : $a^4 - 6a^2 + 1$



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20. Factorise : $a^8 + a^4 + 1$



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21. Factorise : $4x^2 - 9y^2 - 4xz + 6yz$

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22. Factorise : $a^2 + 2a - 323$

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23. Factorise : $x^2 - 19x - 20$

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24. Factorise : $420 + x - x^2$

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25. Factorise : $a^2b^2 - abc - 182c^2$



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26. Factorise : $x^4 - 10x^2 + 16$



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27. Factorise : $a^6 - 7a^3 - 60$



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28. Factorise : $a^8 - a^4 - 2$



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29. Factorise : $a^6b^6 - a^3b^3 - 6$



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30. Factorise : $x^2 - \sqrt{3}x - 18$

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31. Factorise : $(x + 1)(x + 2)(3x - 1)(3x - 4) + 12$

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32. Factorise : $(x^2 + 5x + 4)(x^2 + 5x + 6) - 15$

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33. Factorise : $x^2 - bx - (a + 3b)(a + 2b)$

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34. Factorise : $(a - 1)x^2 - x - (a - 2)$



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35. Factorise : $x^2 + 4px + 4p^2 + 2x + 4p - 15$



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36. Factorise : $p^2 + 2p - (q + 1)(q - 1)$



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37. Factorise : $(x - 1)(x - 2)(x + 3)(x + 4) - 36$



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38. Factorise : $(a^4 + 1) - 2a(a^2 + 1) + 2a^2$



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39. Factorise : $p^2 + p - (a + 1)(a + 2)$

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40. Factorise : $(x - 1)(x - 2)(x + 3)(x + 4) + 6$

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41. Factorise : $(x - y)^2 - x + y - 2$

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42. Factorise : $x^2 + 6x - 27$

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43. Factorise : $(a + b)^2 - 4(a + b) - 12$



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44. Factorise : $(x - 2)^2 - 5(x - 2) + 6$



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45. Factorise : $x^2 - x - 6$



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46. Factorise : $a^2 + \left(p + \frac{1}{p}\right)a + 1$



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47. Factorise : $(x + 1)(x + 3)(x - 4)(x - 6) + 24$



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48. Factorise : $x(x + 1)(x + 2)(x + 3) - 15$

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49. Factorise : $x^4 + x^2 - 2$

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50. Factorise : $x^2 - \left(2a + \frac{1}{a}\right)x + 2$

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51. Factorise : $p(p - 1)(p - 2)(p - 3) - 120$

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52. Factorise : $x^2 + 3x - (a^2 + a - 2)$



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53. Factorise : $x(x + 1)(x + 2) - 3x - 3$



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54. Factorise : $x^2 + 2xy + y^2 - 5x - 5y + 6$



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55. Factorise : $(a - 1)x^2 + x - (a - 2)$



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56. Factorise (using factor theorem) : $12x^2 - 7x + 1$



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57. Factorise (using factor theorem) : $2x^4 - 5x^3 + 6x^2 - 5x + 2$

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58. Factorise : $x(y - z)^2 + y(z - x)^2 + z(x - y)^2 + 8xyz$

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59. Factorise : $a^4(b - c) + b^4(c - a) + c^4(a - b)$

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60. Factorise : $a^4(b^2 - c^2) + b^4(c^2 - a^2) + c^4(a^2 - b^2)$

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1. If $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c) = 0$,

then $x =$

A. a

B. b

C. c

D. $\frac{a + b + c}{3}$

Answer: D



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2. The number of factors of $(a^6 - b^6)$ is -

A. 1

B. 2

C. 3

D. 4

Answer: D



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3. $(41^3 + 1)$ is divisible by

A. 40

B. 41

C. 42

D. 43

Answer: C



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4. If $a = -1, b = 2, c = 3$, then $\frac{a^3 + b^3 + c^3 - 3abc}{(a - b)^2 + (b - c)^2 + (c - a)^2} =$

A. 0

B. - 1

C. 1

D. 2

Answer: D



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5.
$$\frac{(4.125)^3 - (0.125)^3}{(4.125)^2 + 4.125 \times 0.125 + (0.125)^2} = ?$$

A. 4.25

B. 4

C. - 4.25

D. - 4

Answer: B



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6. $\frac{(999)^3 - 1}{(999)^2 - 1} = ?$

A. 1000

B. 998

C. 999.01

D. 999.001

Answer: D



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7. $a^3 + b^3 + c^3 - 3abc = k(a + b + c) \left[(a - b)^2 + (b - c)^2 + (c - a)^2 \right]$,

then k=

A. 0

B. $\frac{1}{2}$

C. $-\frac{1}{2}$

D. 2

Answer: B



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Examples Short Answer Type Questions

1. Factorise : $24a^3 - 3$



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2. Factorise : $x^3 - 6x + 4$

A. $x^3 - 6x + 4$

B.

C.

D.

Answer: $(x - 2)(x^2 + 2x - 2)$



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3. Factorise : $x^3 - 4x + 3$



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4. Factorise : $x^3 + 5x - 6$



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5. Factorise : $x^3 - 3x + 2$



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6. Factorise : $m^6 - 64n^6$



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7. Factorise : $x^3 + 2x + 3$

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8. Factorise : $2a^3 - a^2 - 1$

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9. Factorise : $3y^3 + 2y + 5$

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10. Factorise : $a^3 - 12a - 16$

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11. Factorise : $x^2 + 5x + 6$



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12. Factorise : $p^3 - 7p - 6$



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13. Factorise : $x^3 - 3x^2 + 4$



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14. Factorise : $a^3 - a^2 - 18$



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15. Factorise : $8a^3 + 4a - 3$



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16. Factorise : $x^6 + 27$

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17. Factorise : $x^6 - 64$

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18. Factorise : $8(x - 3)^3 + 343$

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19. Factorise : $x^{12} - y^{12}$

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20. Factorise : $t^9 - 512$

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21. Factorise : $\frac{1}{8a^3} + \frac{8}{b^3}$

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22. Factorise : $a^3 + 3a^2b + 3ab^2 + b^3 - 8$

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23. Factorise : $8a^3 - b^3 - 4ax + 2bx$

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24. Factorise : $x^3 - 6x^2 + 12x - 35$



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25. Factorise : $x^3 + \frac{1}{x^3} - 2x - \frac{2}{x}$

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26. Factorise : $8a^3 - b^3 + 1 + 6ab$

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27. Factorise : $a^6 + 32a^3 - 64$

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28. Factorise : $x^3 + y^3 - 12xy + 64$

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29. Factorise : $(2x - y)^3 - (x + y)^3 + (2y - x)^3$

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30. Factorise : $a^3 + \frac{1}{a^3} + \frac{26}{27}$

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31. Find the value of $(80)^3 - (51)^3 - (29)^3$

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32. If $a + b + c = 9$, $a^2 + b^2 + c^2 = 27$ and $a^3 + b^3 + c^3 = 81$ then find the value of $3abc$.

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33. $a + b + c = 8$, $abc = 8$ and $ab + bc + ca = 10$ the determine the value of $a^3 + b^3 + c^3$

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34. Prove that

$$\left(\frac{a}{b} - \frac{b}{c}\right)^3 + \left(\frac{b}{c} - \frac{c}{a}\right)^3 + \left(\frac{c}{a} - \frac{a}{b}\right)^3 = \frac{3(ca - b^2)(ab - c^2)(bc - a^2)}{a^2b^2c^2}$$

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Exercise 2 1

1. Factorise : $4x^4 + 1$

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2. Factorise : $x^4 - 7x^2 + 1$



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3. Factorise : $4x^4 - 8x^2 + 1$



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4. Factorise : $64x^4 + 81y^4$



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5. Factorise : $x^8 - y^8$



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6. Factorise : $x^{16} - y^{16}$



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7. Factorise : $128x^4 + 162$

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8. Factorise : $1 - a^2 + 2ab - b^2$

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9. Factorise : $4a^2 - b^2 + 2a + b$

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10. Factorise : $4x^2 - y^2 + 2x - 2y - 3xy$

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11. Factorise : $9a^2 - 24ab + 16b^2 + 3ax - 4bx$



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12. Factorise : $a^2 + b^2 - c^2 - 2ab$



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13. Factorise : $a^2 - 6ab + 12bc - 4c^2$



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14. Factorise : $x^2 + 2x - 22499$



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15. Factorise : $3a^2 - b^2 - c^2 + 2ab - 2bc + 2ca$



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16. Factorise : $a^2 + \frac{1}{a^2} + 2 - 3a - \frac{3}{a}$

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17. Factorise : $\frac{x^4}{16} - \frac{y^4}{25}$

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18. Factorise : $x^4 - 11x^2y^2 + y^4$

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19. Factorise : $(x^2 - y^2)(a^2 - b^2) - 4abxy$

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20. Factorise : $(4x^2 - 1)(4y^2 - 1) + 16xy$



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21. Factorise : $x^2 - 2ax + (a + b)(a - b)$



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22. Factorise : $4a^2 - 12ab + 9b^2 + 2a - 3b$



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23. Factorise : $(a + b)^3 - a - b$



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24. Factorise : $2a^8 - 32$



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25. Factorise : $b^2 - ac - bc + ab$

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26. Factorise : $2x^2 + yz - 2xy - zx$

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27. Factorise : $c + bc^2 - ba^2 - a$

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28. Factorise : $x^4 + x^2 + 1$

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29. Factorise : $a^4 + a^2x^2 + x^4$



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30. Factorise : $4a^2 - 4ab - c^2 - 2bc$



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Exercise 2 2 A Factorise The Following Polynomials

1. $x^3 - 19x - 30$



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2. $8x^3 + 8x - 5$



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3. $a^3 - 2a^2 + 1$



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4. Factorise: $4a^3 - 3a + 1$



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5. Factorise: $x^3 + x - 2$



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Exercise 2 2 B Factorise The Following Polynomials

1. $8x^3 + 27$



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2. $8x^3 - 27$



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3. $4x^3 + 108y^3$



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4. $x^3 - 8(y - z)^3$



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5. $x^3 - y^3 + 3y^2 - 3y + 1$



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6. $2x^3 + x^2y + y^3$



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7. $63a^3 + 6a^2 - 12a + 8$

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8. $a^3 - 9b^3 + (a + b)^3$

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9. $m^3 - n^3 - m(m^2 - n^2) + n(m - n)^2$

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10. Factorise : $x^2 - \frac{8}{x}$

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11. $125m^{12} - 729n^{12}$



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12. $x^7 + x^4 - 16x^3 - 16$



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13. $16x^7 - 81x^3 - 16x^4 + 81$



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14. $2a^3 - a^2b - b^3$



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15. $9x^6y^2 - 576y^2 - 4x^8 + 256x^2$



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16. $32x^4 - 500x$

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17. $AR^3 - Ar^3 + AR^2h - Ar^2h$

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18. $729x^6 - y^6$

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19. $(2a^3 - b^3)^3 - b^9$

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20. $a^3 + 9b^3 + (a - b)^3$



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Exercise 2 2 C Factorise The Following Polynomials

1. $8a^3 - 27b^3 - 1 - 18ab$



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2. $1 + 8x^3 + 18xy - 27y^3$



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3. $1 + b^3 + 8c^3 - 6bc$



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4. $a^3 - b^3 + 1 + 3ab$



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5. Factorise : $a^6 - 5a^3 + 8$



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6. Factorise : $a^6 - 18a^3 + 125$



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7. Factorise : $x^3 + \frac{1}{x^3} + \frac{47}{64}$



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8. Factorise : $2\sqrt{2}a^3 + 8b^3 - 27c^3 + 18\sqrt{2}abc$



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$$9. x^3 + 8y^3 + 27z^3 - 18xyz$$

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$$10. x^3 - 8y^3 + 64z^3 + 24xyz$$

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$$11. (x - y)^3 + (y - z)^3 + (z - x)^3$$

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$$12. (2a - 3b)^3 + (4c - 2a)^3 + (3b - 4c)^3$$

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13.

Factorise

:

$$\left(\frac{x}{2} + y + \frac{z}{3}\right)^3 + \left(\frac{x}{3} - \frac{2y}{3} + z\right)^3 - \left(\frac{5x}{6} + \frac{y}{3} + \frac{4z}{3}\right)^3$$

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$$14. (1 - x)^3 - (1 - y)^3 + (x - y)^3$$

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$$15. (5a - 7b)^3 + (9c - 5a)^3 + (7b - 9c)^3$$

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$$16. (3a - 2b)^3 + (2b - 5c)^3 + (5c - 3a)^3$$

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$$17. (2x - y)^3 - (x + y)^3 + (2y - x)^3$$



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$$18. (a - 2b)^3 + (c - a)^3 + (2b - c)^3$$



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Exercise 2 2 D Calculate

$$1. (101)^3 - (51)^3 - (50)^3$$



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$$2. (41)^3 - (21)^3 - (20)^3$$



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3. $a + b + c = 6$, $a^2 + b^2 + c^2 = 14$ and $a^3 + b^3 + c^3 = 36$ then find the value of $3abc$.

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4. If $x = y = 222$ and $z = 223$, then find the value of $x^3 + y^3 + z^3 - 3xyz$

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5. If $a + b + c = 10$, $a^2 + b^2 + c^2 = 38$ and $a^3 + b^3 + c^3 = 160$ then find the value of $3abc$.

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6. Find the value of $a^3 + b^3 + c^3 - 3abc$, when

$$a + b + c = 8, ab + bc + ca = 19$$

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7. Find the value of $a^3 + b^3 + c^3 - 3abc$, when

$$a + b + c = 5, a^2 + b^2 + c^2 = 11$$



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Exercise 2 2

1. Show that $(1 - a)^3 + (b - 1)^3 + (a - b)^3 = 3(1 - a)(b - 1)(a - b)$



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2. If $x = 2 - k$ Prove that $x^3 + 6xk + k^3 - 8 = 0$



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3. If $x + y + z = 0$, then prove that $x^3 + y^3 + z^3 = 3xyz$



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4. Prove that

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

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Exercise

1. $(x - 3)(x - 5) - \frac{2a + 1}{a^2}$

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2. $(x + 5)(x + 9) + \frac{128}{32}$

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3. Factorise : $10x^2 - x - 11$

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4. Factorise : $4a^2 + 11a + 6$

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5. Factorise : $4x^2 - x - 5$

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6. Factorise : $8x^2 - 10x - 7$

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7. Factorise : $3 - 13a + 10a^2$



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8. Factorise : $5 + 3a - 14a^2$



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9. Factorise : $18x^2 + 31xy - 20y^2$



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10. Factorise : $\frac{1}{3}a^2 - 2a - 9$



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11. Factorise : $x^2 - 2x + \frac{3}{4}$



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12. Factorise : $6\sqrt{3}a^2 - 21a + 5\sqrt{3}$

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13. Factorise : $4(x^2 - 2x)^2 + 11(x^2 - 2x) + 6$

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14. Factorise : $3(a + b)^2 + 10(a^2 - b^2) - 25(a - b)^2$

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15. Factorise : $2(m^2 + n^2)^2 - 3mn(m^2 + n^2) - 2m^2n^2$

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16. Factorise : $7(a^2 + b^2)^2 - 15(a^4 - b^4) + 8(a^2 - b^2)^2$



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17. Factorise : $2a^2 - 3a - (p + 1)(2p - 1)$



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18. Factorise : $ax^2 + (a^2 + 1)x + a$



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19. Factorise : $a^2x^2 + ax - (a + 1)(a + 2)$



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20. Factorise : $(x - 1)^2a^2 + 2(x^2 + 1)ab + (x + 1)^2b^2$



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21. Factorise : $(a - b)^2x^2 + 4abxy - (a + b)^2y^2$

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22. Factorise : $(x + y)r^2 + 2xr + (x - y)$

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23. Factorise : $(a^2 + 1)x^2 + a^2(a^2 + 1)x - (a^2 + 1)$

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24. Factorise : $(a^2 - a - 2)x^2 - 3x - 1$

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25. Factorise : $(a^2 - b^2)(x^2 + 1) - 2(a^2 + b^2)x$



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26. Factorise : $(x^2 - 1)^2 + 8x(x^2 + 1) + 19x^2$



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27. Factorise : $(a - 1)x^2 + a^2xy + (a + 1)y^2$



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28. Factorise : $4\left(a^2 + \frac{1}{a^2}\right) - 4\left(a - \frac{1}{a}\right) - 11$



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29. Factorise : $2a^2 + b^2 - c^2 + 3ab + ac$



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30. Factorise : $(2 - \sqrt{3})x^2 + 4x + (2 + \sqrt{3})$

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31. Factorise : $(\sqrt{3} - 1)x^2 - 2x - (\sqrt{3} + 1)$

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32. Factorise : $(\sqrt{2} - 1)x^2 + 2\sqrt{2}x + (\sqrt{2} + 1)$

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Exercise 2 3

1. Factorise (Using factor theorem) : $x^3 - 4x + 3$

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2. Factorise (Using factor theorem) : $a^3 - 12a - 16$

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3. Factorise (Using factor theorem) : $2a^3 - a^2 - 1$

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4. Factorise (Using factor theorem) : $a^3 - 7a + 6$

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5. Factorise (Using factor theorem) : $x^3 + 5x - 6$

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6. Factorise (Using factor theorem) : $x^3 - 3x + 2$



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7. Factorise (Using factor theorem) $3y^3 + 2y + 5$



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8. Factorise (Using factor theorem) : $x^3 - 7x - 6$



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9. Factorise (Using factor theorem) : $x^3 + 5x + 6$



[Watch Video Solution](#)

10. Factorise (Using factor theorem) : $2x^3 - 3x - 1$



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11. Factorise (Using factor theorem) : $2a^3 - 5a - 6$

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12. Factorise (Using factor theorem) : $36 - 7x^2 - x^3$

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13. Factorise (Using factor theorem) : $3x^3 - 7x^2 + 8x - 12$

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14. Factorise the following: $x^3 - 2x^2 - 5x + 6$

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15. Factorise (Using factor theorem) : $a^3 - 7a^2 + 7a + 15$



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16. Factorise (Using factor theorem) : $2a^3 - 5a^2b + 6ab^2 + 3b^3$



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17. Factorise (Using factor theorem) : $x^4 + 4x^3 - 7x^2 - 34x - 24$



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18. Factorise (Using factor theorem) : $p^3 - 3pq^2 + 2q^3$



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Exercise 2 4 Mcq

1. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} =$

A. 0

B. -1

C. 1

D. 3

Answer: D



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2. If $a^x a^y a^z = 1$, then $x^3 + y^3 + z^3 = ?$



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$$3. \frac{(x - y)^3 + (y - z)^3 + (z - x)^3}{(x - y)(y - z)(z - x)} =$$

A. $3xyz$

B. 3

C. xyz

D. 0

Answer: D



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4. If $a^3 + b^3 + c^3 = 3abc$ and $a + b + c \neq 0$, then

A. $a = 2b + c$

B. $b = 2c + a$

C. $a = b = c$

D. $c = 2a + b$

Answer: C



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5. The number of factors of the polynomial $(x^2 + bx + c)$ is

A. 1

B. 2

C. 3

D. 4

Answer: B



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6. If $x^2 - px + 8 = (x - 2)(x - 4)$ be an identity, then $p =$

A. 0

B. 2

C. 4

D. 6

Answer: D



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7. If one of the factors of $x^2 + 2x - (p + 1)(p - 1)$ be 0, then $p =$

A. 0

B. -2

C. ± 1

D. 2

Answer: C



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8. One of the factors of $\left[(2a - b)^2 - (a - 2b)^2 \right]$ is

A. 0

B. $2(a - b)$

C. $3(a + b)$

D. $a + b$

Answer: D



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9. The identity with the help of which , the polynomial $(x^4 + x^2 + 1)$ can be factorised is

A. $(a - b)^2 = a^2 - 2ab + b^2$ and $a^2 - b^2 = (a - b)(a + b)$

B. $(a + b)^2 = a^2 + 2ab + b^2$ and $a^2 - b^2 = (a - b)(a + b)$

C. $a^2 + b^2 = (a + b)^2 - 2ab$ and $a^2 - b^2 = (a - b)(a + b)$

D. is not possible to factorise

Answer: B



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10. If x and y ($x > y$) be two positive integers and $x^2 - y^2 = 11 \times 9$, then

A. $x = 100, y = 1$

B. $x = 11, y = 9$

C. $x = 10, y = 1$

D. $x = 22, y = 2$

Answer: C

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11. If $\frac{a}{b} + \frac{b}{a} = 1$ then $a^3 + b^3 =$

A. 0

B. 1

C. a

D. b

Answer: A



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12. If $x^2 - px + 12 = (x - 3)(x - a)$ be an identity, then the values of a and p are respectively-

A. $a = 4, p = 7$

B. $a = 7, p = 4$

C. $a = 4, p = -7$

D. $a = -4, p = 7$

Answer: C



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13. $25^3 - 75^3 + 50^3 + 3 \times 25 \times 75 \times 50 =$

A. 150

B. 0

C. 25

D. 50

Answer: B



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Exercise 2 4 Short Answer Type Questions

1. If $a + b + c = 0$, then prove that $a^3 + b^3 + c^3 = 3abc$



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2. Prove that $(x^{201} + 1)$ is divisible by $(x+1)$.

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3. If $a = 1$, $b = 2$, $c = 3$, then find then value of
$$\frac{2a^2 + 2b^2 + 2c^2 - ab - bc - ca}{a^3 + b^3 + c^3 - 3abc}$$

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4. Show that $(17^3 + 7^3)$ is divisible by 24.

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5. If $a + b + 1 = 0$, determine the value of $(a^3 + b^3 - 3ab + 1)$.

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6. If $a = b = c = 99999$, then find the value of $(a^3 + b^3 + c^3 - 3abc)$

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7. If $a + b + c = 8$ and $ab + bc + ca = 11$, then find the value of $a^3 + b^3 + c^3 - 3abc$

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8. If $3x = a + b + c$, then find the value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$

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9. If $a^2 - b^2 = 224$ where a and b are negative integers ($a < b$) then find the value of a and b .

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10. If c be a whole number , but not a natural number and if $\frac{a^2}{b} + \frac{b^2}{a} = 3c$ then find $(a^3 + b^3 + c^3 - 3abc)$.

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11. Find the value of $(0.01)^3 - (0.011)^3 + (0.001)^3 + 0.00000033$

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12. Find :
$$\frac{(b^{2a} - c^{2a})^3 + (c^{2a} - a^{2a})^3 + (a^{2a} - b^{2a})^3}{(b^a - c^a)^3 + (c^a - a^a)^3 + (a^a - b^a)^3}$$

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13. If $3s = a + b + c$, then find $(s - a)^3 + (s - b)^3 + (s - c)^3 + 3(s - a)(s - b)(s - c)$

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14. Calculate : $(80)^3 - (20)^3 - (60)^3$

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15. Calculate : $\frac{10^3 + 4^3}{10^2 - 24}$

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16. If $a + b + 5 = 0$, then find the value $(a^3 + b^3 - 15ab + 125)$

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17. If $a - b = -1$ then find the value of $(a^3 - b^3 + 3ab + 1)$

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18. If $a \neq 0$, determine the number of factors of $ka^2 - \frac{27}{a}$

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19. If $x - kx^2 + 4 = (x + 1)(x - a)$ be an identity, then find the value of k and a .

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20. If a and b be two positive integers ($a > b$) such that $a^2 - b^2 = 399$, then find the value of a and b .

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21. If $\frac{x}{y} + \frac{y}{z} + \frac{z}{x} = 0$, then find $\left[\left(\frac{x}{y}\right)^3 + \left(\frac{y}{z}\right)^3 + \left(\frac{z}{x}\right)^3 \right]$

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Exercise 2 4 Long Answer Type Questions

1. Factorise : $a(b^2 - c^2) + b(c^2 - a^2) + c(a^2 - b^2)$

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2. Factorise : $bc(b^3 - c^3) + ca(c^3 - a^3) + ab(a^3 - b^3)$

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3. Factorise : $a(b + c)^2 + b(c + a)^2 + c(a + b)^2 - 4abc$

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4. Factorise : $a^2(b + c) + b^2(c + a) + c^2(a + b) + a^3 + b^3 + c^3$

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5. Factorise : $b^2c^2(b^2 - c^2) + c^2a^2(c^2 - a^2) + a^2b^2(a^2 - b^2)$

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6. Factorise : $a^4(b^2 - c^2) + b^4(c^2 - a^2) + c^4(a^2 - b^2)$

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7. Factorise : $(a^2 - b^2)(a + b) + (b^2 - c^2)(b + c) + (c^2 - a^2)(c + a)$

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8. Factorise : $(b + c - a)(c + a - b)(a + b - c) + 8abc$

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9.

Factorise

:

$$x(1 + y^2)(1 + z^2) + y(1 + z^2)(1 + x^2) + z(1 + x^2)(1 + y^2) + 4xyz$$



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10. Factorise : $(x + y + z)(x^3 + y^3 + z^3 + xyz) - x^4 - y^4 - z^4$



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11. Factorise : $x^2(b - c) + b^2(c - x) + c^2(x - b)$



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