



## MATHS

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### FACTORISATION OF POLYNOMIALS

#### Solved Examples

1. The factor form  $4(3a - 2b)^2 - 5(3a - 2b)$  is

A.  $(3a - 2b)[12a - 8b - 5]$

B.  $(2a - 3b)[12a - 8b - 5]$

C.  $(3a - 2b)[8a - 12b - 5]$

D.  $(3a - 2b)[5a - 8b - 12]$

**Answer: A**



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2. The factor form  $xy + yz + xa + za$  is

A.  $xz + ya$

B.  $(x + z)(y + a)$

C.  $xy + za$

D.  $(x + a)(y + z)$

**Answer: B**



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**3. The factor form  $16x^2 - 8x + 1$  is**

A.  $(4x - 1)^2$

B.  $(2x - 2)^2$

C.  $(3x - 2)^2$

D.  $(5x - 1)^2$

**Answer: A**



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**4. Factorize:**  $x^4 + x^2y^2 + y^4$

A.  $(x^2 + y^2 + xy)(x^2 + y^2 + xy)$

B.  $(x^2 - y^2 + xy)(x^2 - y^2 - xy)$

C.  $(x^2 + y^2 + xy)(x^2 - y^2 + xy)$

D.  $x^2 + y^2 + xy)(x^2 + y^2 - xy)$

**Answer: D**



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5. The factor form  $x^2 + 9x + 14$  is

A.  $(x + 7)(x + 2)$

B.  $(x - 7)(x + 7)$

C.  $(2x + 7)(3x + 3)$

D.  $(x + 3)(x + 4)$

**Answer: A**



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6. The factor form  $(2x + 3y)^3 - (2x - 3y)^3$  is

A.  $18y(4x^2 + 3y^2)$

B.  $18y(4x - 3y)$

C.  $18y^2(4x + 3y)$

D.  $18y(4x^2 - 3y^2)$

**Answer: A**



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1. The factor form  $5x^2 - 20xy$  is

A.  $5x(x - 4y)$

B.  $10x(x - 2y)$

C.  $5(x^2 - 2y)$

D. None of these

**Answer: A**



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2. The factor form  $5x(y + z) - 7y(y + z)$  is

A.  $(5x - 7y)(y - z)$

B.  $(5x - 7y)(y + z)$

C.  $(5x + 7y)(y + z)$

D.  $(5x + 7y)(y - z)$

**Answer: B**



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3. If  $\left(x + \frac{1}{x}\right) = 6$ , then  $\left(x^2 + \frac{1}{x^2}\right)$  is equal to

A. 32

B. 38

C. 34

D. 44

**Answer: C**



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4. The factor form  $y^2 + 3y + y + 3$  is

A.  $(y + 1)(y + 3)$

B.  $y^2 + 3^2$

C.  $(y^2 + 3)^2$

D.  $(y + 2)(y + 1)$

**Answer: A**



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5. The factor form  $z^2 + \frac{1}{z^2} + 2 - 2z - \frac{2}{z}$  is

A.  $\left(z + \frac{1}{z} + 2\right)\left(z - \frac{1}{z}\right)$

B.  $\left(z + \frac{1}{z}\right)\left(z + \frac{1}{z} - 2\right)$

C.  $\left(z - \frac{1}{z} + 2\right)\left(z + \frac{1}{z}\right)$

D.  $\left(z - \frac{1}{z}\right)\left(z - \frac{1}{z} - 2\right)$

**Answer: B**



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**6. The factor form  $8 - 4x - 2x^3 + x^4$  is**

A.  $(2 - x)(4 - x^3)$

B.  $(2 + x)(4 - x^3)$

C.  $(2 + x)(4 + x^3)$

D.  $(2 - x)(4 + x^3)$

**Answer: A**



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7. The factor form  $x^2 - 2\sqrt{3}x + 3$  is

A.  $(x + \sqrt{3})^2$

B.  $(x - \sqrt{3})^2$

C.  $(x + \sqrt{3})(x - \sqrt{3})$

D.  $(x + 2)(x + \sqrt{3})$

**Answer: B**



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**8.** The factor form  $(a^4b^4 - 16c^4)$  is

A.  $4(a^2b^2 + c^2)(ab - 2c)(ab + 2c)$

B.  $(a^2b^2 - 4c^2)(ab + 2c)^2$

C.  $(a^2b^2 + 4c^2)(ab + 2c)(ab - 2c)$

D.  $(a^2b^2 - 4c^2)^2(ab + 2c)(ab + 4c)$

**Answer: C**



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

is

A.  $3\sqrt{3}$

B.  $3(\sqrt{3} - 1)$

C. 0

$$D. 3(\sqrt{3} + 1)$$

**Answer: C**



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**10.** If 'a' is an integer such that

$$\left(a + \frac{1}{a}\right) = \frac{17}{4}, \text{ then the value of } \left(a - \frac{1}{a}\right)$$

is

A. 4

B.  $\frac{13}{4}$

C.  $\frac{17}{4}$

D.  $\frac{15}{4}$

**Answer: D**



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11. What are the factors of  $(a^3 - (\sqrt{2b})^3)$  ?

A.  $(a - \sqrt{2b})(a^2 + \sqrt{2ab} + 2b)$

B.  $(a - \sqrt{2b})(a^2 + \sqrt{2ab} + 2b^2)$

C.  $(a - \sqrt{2b})(a^2 + \sqrt{2ab} + b^2)$



D. None of above

**Answer: B**



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**12.** What are the factors of  $32x^4 - 500x$  ?

A.  $4x(2x - 5)(4x^2 + 10x + 25)$

B.  $4x(2x - 5)(4x^2 + 10x + 5)$

C.  $4x(2x - 5)(x^2 + 10x + 25)$

D. None the above

**Answer: A**



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**13.** What are the factors of  $[(a - b) - a^3 + b^3]$

?

A.  $(a - b)(1 - a^2 - b^2 + ab)$

B.  $(a - b)(1 - a^2 + b^2 - ab)$

C.  $(a - b)(1 - a^2 - b^2 - ab)$

D. None of these

**Answer: C**



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**14.** The factors of  $(a - b)^3 + (b - c)^3 + (c - a)^3$  are:

A.  $3(a - b)(b - c)(a - c)$

B.  $3(a - b)(c - b)(c - a)$

C.  $3(a - b)(b - c)(c - a)$

D. None of these

**Answer: C**



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

A.  $3(5a - 7b)(9c - 5a)(7b - 9c)$

B.  $3(5a - b)(9c - 5a)(b - 9c)$

C.  $(5a - 7b)(9c - 5a)(7b - 9c)$

D. None of the above

**Answer: A**



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16. What is the remainder when

$(4x^3 - 3x^2 + 2x - 1)$  is divided by  $(x + 2)$  ?

A. 49

B. -49

C. 9

D. -32

**Answer: B**



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17. Find the remainder when  $f(x) = 12x^3 - 13x^2 - 5x + 7$  is divided by  $(3x + 2)$ .

A. 1

B. 2

C. 3

D. 4

**Answer: A**





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18.  $\frac{1}{3}x^2 - 2x - 9$

A.  $\frac{1}{3}(x + 3)(x - 9)$

B.  $\frac{1}{3}(x + 3)(x + 9)$

C.  $(x + 3)(x - 9)$

D. None of these

**Answer: A**



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19.  $6\sqrt{3}x^2 - 47x + 5\sqrt{3}$

A.  $(2x - 5\sqrt{3})(1 - 3\sqrt{3}x)$

B.  $(2x - 5\sqrt{3})(3\sqrt{x} - 1)$

C.  $(2x - 5\sqrt{3})(3x - 1)$

D.  $(2x - 5\sqrt{3})(3\sqrt{3}x - 1)$

**Answer: D**



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20. What must be added to  $\frac{1}{x}$  to make it equal to  $x$ ?

A.  $\frac{x^2 - 1}{x}$

B.  $\frac{x^2 + 1}{x}$

C.  $\frac{1}{x}$

D. None of these

**Answer: A**



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21. If  $a+b+c=10$  and  $ab + bc + ac=31$  , then the value of  $a^2 + b^2 + c^2$  is

A. 28

B. 100

C. 62

D. 38

**Answer: D**



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22. Factorise  $x^4 + x^2 + 25$

A.  $(x^2 + 5 - 3x)(x^2 + 5x - 3)$

B.  $(x^2 + 5 - 3x)(x^2 + 5 + 3x)$

C.  $(x^2 + 5 - 3x)(x^2 + 5 - 3x)$

D. None of these

**Answer: B**



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23. The factors of  $8a^3 + b^3 - 6ab + 1$  are

$$(2a + b - 1)(4a^2 + b^2 + 1 - 3ab - 2a)$$

$$(2a - b + 1)(4a^2 + b^2 - 4ab + 1 - 2a + b)$$

$$(2a + b + 1)(4a^2 + b^2 + 1 - 2ab - b - 2a)$$

$$(2a - 1 + b)(4a^2 + 1 - 4a - b - 2ab)$$

A.

$$(2a + b + 1)(4x^2 + b^2 + 1 - 2ab - b - a)$$

B.

$$(2a + b + 1)(4a^2 + a^2 + 1 - 2ab - b - 2a)$$

C.

$$(2a + b + 1)(4a^2 + b^2 + 1 - 2ab - b - 2a)$$

D. None of the above

**Answer: C**



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**24.**

**Factorize:**

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

A.  $(x - 1)(x + 3)(x^2 + 2x + y)$

B.  $(x - 1)(x + 3)(x^2 + x - y)$

C.  $(x - 1)(x - 3)(x^2 + 2x - y)$

D. None of the above

**Answer: D**



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25. The factors of  $x^2 + \frac{1}{4x^2} + 1 - 2x - \frac{1}{x}$

are

A.  $\left(x + \frac{1}{x}\right)\left(x + \frac{1}{2x} - 2\right)$

B.  $\left(x + \frac{1}{2x}\right)\left(x + \frac{1}{2x} - 2\right)$

C.  $\left(x + \frac{1}{2x}\right)\left(x + \frac{1}{x} - 2\right)$

D. None of these

**Answer: B**



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**26.** The factors of  $x^4 - 14x^2y^2 - 51y^4$

A.  $(x + \sqrt{17}y)(x - \sqrt{17}y)(x^2 + 3y^2)$

B.  $(x + \sqrt{7}y)(x - \sqrt{17}y)(x^2 + 3y^2)$

C.  $(x + \sqrt{17}y)(x - \sqrt{17}y)(x^2 + y^2)$

D. None of the above

**Answer: A**



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27. The remainder when  $4a^3 - 12a^2 + 14a - 3$

is divided by  $2a - 1$  is

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

B.  $\frac{7}{2}$



C.  $\frac{3}{2}$

D. None of these

**Answer: C**



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**28.** Find the remainder when the polynomial

$(5x^3 - 8x^2 - 2x - 5)$  is divided by  $x - 2$ .

A.  $-1$

B.  $-2$

C. 3

D. 2

**Answer: A**



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**29.** The factors of  $4x^3 + 23x^2 - 41x - 42$  are

A.  $(2x - 7)(x + 7)(4x + 3)$

B.  $(x - 2)(x + 7)(4x + 3)$

C.  $(x - 2)(x + 7)(x + 4)$

D. None of these

**Answer: B**



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**30.** Find the remainder when

$(x^3 - 4x^2 + 5x + 6)$  is divided by  $(x-2)$ .

A.  $-8$

B.  $8$

C.  $2$

D. None of these

**Answer: B**



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