



MATHS

BOOKS - V PUBLICATION

POLYNOMIÁS

Question Bank

1. Write the second degree polynomials given below as the product of two first degree polynomials. Find also the solutions of the

equation $p(x) = 0$ in each:-

$$p(x) = x^2 - 7x + 12.$$



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2. In each pair of polynomials given below, find the number to be subtracted from the first to get a polynomial for which the second is a factor. Find also the second factor of the polynomial got on subtracting the number.

i) ' $x^2 - 3x + 5, x - 4$ '

ii) ' $x^2 - 3x + 5, x^2 + 4$ '

iii) ' $x^2+5x-7, x-1$ '

iv) ' $x^2-4x-3, x-1$ '



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3. In the polynomial $x^2 + kx + 6$, what number must be taken as 'k' to get a polynomial for which 'x-1' is a factor? Find also the other factor of that polynomial.



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4. In the polynomial $kx^2 + 2x - 5$, 'what number must be taken as 'k', to get a polynomial for which 'x-1' is a factor?



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5. In the polynomial $x^2 + ax + b$, what numbers must be taken as a and 'b', to get a polynomial for which '(x-2)' and '(x-3)' as factors?



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6. Prove that the polynomial. $x^2 + 4x + 5$ cannot be written as a product of first degree polynomials.



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7. Write the polynomial $x^2 - 9x - 22$ as the product of two first degree polynomials.



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8. a) Write the second degree polynomial ' $p(x) = x^2 + x - 6$ ' as the product of first degree polynomials

b) Find also the solution of the equation ' $p(x) = 0$ '



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9. What number should be added to the polynomial $p(x) = x^2 + x - 1$, so that ' $(x-2)$ ' is a factor of the new polynomial?



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10. Factorise $x^2 - 2x + 1$ into first degree polynomials.



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11. Write $2x^2 - 7x + 6$ as the product of two first degree polynomials.



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12. Prove that none of the polynomials below can be factored into a product of first degree polynomials:- $x^2 + x + 1$.



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13. Write the second degree polynomials given below as the product of two first degree polynomials:- $x^2 - 20x + 91$.



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14. Prove that none of the polynomials below can be factored into a product of first degree polynomials:- $x^2 + 4x + 5$.



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15. In the polynomial $p(x) = x^2 + 4x + k$, upto what number can we take as k , so that $p(x)$ can be factorized as a product of two first degree polynomials?



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16. Write the polynomial $p(x) = x^2 + 7x + 12$ as the product of first degree polynomials.



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17. For what values of 'x', the polynomial $2x^2 - 7x - 15$ is equal to zero?

Write the polynomial as the product of two first degree polynomials.



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18. Given 'x-1' is a factor of $x^2 + ax + b$ Prove that 'a+b=-1'



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19. Write the polynomial $p(x) = x^2 + 4x + 1$ as the product of two first degree polynomials.
Find the solution of the equation 'p(x)=0'



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20. In the polynomial $p(x) = x^2 + ax + b$, $p(3 + \sqrt{2}) = 0$, $p(3 - \sqrt{2}) = 0$. Write this polynomial after finding a and b .



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21. What is the smallest natural number k for which the polynomial $2x^2 + kx + 6$ can be written as a product of two first degree polynomials?

Write down the polynomial using 'k' and

express it as the product of two first degree polynomials.



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22. Check whether ' $(x+2)$ ' and ' $(x-5)$ ' are factors of the polynomial $x^2 + 7x + 10$



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23. $p(x) = x^2 - 4x + 4$

a) Prove that $(x - 2)$ is a factor of $p(x)$.

b) Prove that for any number x , $p(x)$ is always non negative.



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24. If $x^2 + x + 2 = (x - 2)(x + a) + b$

a) Find 'a' and 'b'.

b) What number should be added to $x^2 + x + 2$ to get a polynomial having a factor '(x+3)'



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25. Write a second degree polynomial 'p(x)' in which $p(\sqrt{2} + 1) = p(\sqrt{2} - 1) = 0$



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26. a) Find 'p(1)' if $p(x) = x^2 + 2x + 5$

b) If (x-1) is a factor of $x^2 + 2x + k$, what number is 'k' ?



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27. If $x - 1$ is a factor of the second degree polynomial $P(x) = ax^2 + bx + c$ and $P(0) = -5$ Write a second degree polynomial whose one factor is $x = 1$.



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28. If $(x-1)$ is a factor of the polynomial $5x^3 - 4x^2 + x - k$, what number is 'k' ?



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29. Consider the polynomial

$$p(x) = ax^3 - x^2 - bx - 1$$

a) Find ' $p(1)$ '

b) What is the relation between a and ' b ' if ' $x-1$ ' is a factor of ' $p(x)$ '?

c) What is the relation between a and b if ' $x+1$ ' is a factor of ' $p(x)$ '?

d) Will ' $p(x)$ ' have both ' $(x+1)$ ' and ' $(x-1)$ ' as factors for any number a and b ? Justify.



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30. Consider the polynomial

$$p(x) = x^3 + ax^2 - x + b$$

a) Find the relation between 'a' and 'b' if (x-1) is a factor of p(x)

b) What is the relation between 'a' and 'b' if (x-2) is a factor of p(x) ?

c) Find a and 'b' so that both (x-1) and (x-2) are factors of p(x).



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31. $p(x) = ax^3 + bx^2 + cx + d$

a) Find 'p(-1)'

b) If (x+1) is a factor of 'p(x)', then prove that 'a+c=b+d'

c) Write a third degree polynomial having (x+1) as a factor.



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32. Check whether (x-3) is a factor of the polynomial $2x^3 - x^2 - 3x + 4$





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33. Write the polynomial $x^2 - 3x + 2$ as the product of two first degree polynomials.



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34. What is the maximum value of 'k', for which the polynomial $x^2 - x + k$ can be written as a product of two first degree polynomials?



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35. What number should be added to the polynomial $x^3 - 2x^2 + x - 4$ to get $(x-2)$ as a factor of the polynomial?



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36. Prove that the value of the polynomial $x^2 - 6x + 9$ cannot be negative numbers.



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