NCERT MATHS SOLUTIONS

Class - 9 || POLYNOMIALS

Ques No.	Question
1	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.1 - Q 1** Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer. (i) $4x^2 - 3x + 7$ (ii) $y^2 + \sqrt{2}$ (iii) $3\sqrt{t} + t\sqrt{2}$ (iv) $y + \frac{2}{y}$ (v) $x^{10} + y^3 + t^{50}$ Watch Free Video Solution on Doubtnut
2	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.1 - Q 2** Write the coefficients of x^2 in each of the following: (i) $2 + x^2 + x$ (ii) $2 - x^2 + x^3$ (iii) $\frac{\pi}{2}x^2 + x$ (iv) $\sqrt{2}x - 1$ Watch Free Video Solution on Doubtnut
3	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.1 - Q 3** Give one example each of a binomial of degree 35. and of a monomial of degree 100. Watch Free Video Solution on Doubtnut
4	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.1 - Q 4** Write the degree of each of the following polynomials: (i) $5x^3 + 4x^2 + 7x$ (ii) $4 - y^2$ (iii) $5t - \sqrt{7}$ (iv) 3 Watch Free Video Solution on Doubtnut
5	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.1 - Q 5** Classify the following as linear, quadratic and cubic polynomials: (i) $x^2 + x$ (ii) $x - x^3$ (iii) $y + y^3 + 4$ (iv) $1 + x$ (v) 3t (vi) r^2 (vii) $7x^3$ Watch Free Video Solution on Doubtnut

6	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.2 - Q 1** Find the value of the polynomial $5x - 4x^2 + 3$ at (i)$x = 0$ (ii) $x = \ -1$ (iii) $x = 2$ Watch Free Video Solution on Doubtnut
7	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.2 - Q 2** Find p(0), p(1) and p(2) for each of the following polynomials: (i) $p(y) = y^2 - y + 1$ (ii) $p(t) = 2 + t + 2t^2 - t^3$ (iii) $p(x) = x^3$ (iv) $p(x) = (x - 1)(x + 1)$ Watch Free Video Solution on Doubtnut
8	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.2 - Q 3** Verify whether the following are zeroes of the polynomial, indicated against them. (i) $p(x) = 3x + 1, x = -\frac{1}{3}$ (ii) $p(x) = 5x - \pi, x = \frac{4}{5}$ (iii) $p(x) = x^2 - 1, x = 1, -1$ (iv) $p(x) = (x + 1)(x + 2), x = \ -1, 2$ (v) $p(x) = x^2, x = 0$ (vi)

	$p(x) = lx + m, x = -\frac{m}{l}$ (vii) Watch Free Video Solution on Doubtnut
9	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.2 - Q 4** Find the zero of the polynomial in each of the following eases: (i) $p(x) = x + 5$ (ii) $p(x) = x - 5$ (iii) $p(x) = 2x + 5$ (iv) $p(x) = 3x - 2$ (v) $p(x) = 3x$ (vi) $p(x) = ax, a \neq 0$ (vii) $p(x) = cx + d, c \neq 0, c, d$ are real numbers. Watch Free Video Solution on Doubtnut
10	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.3 - Q 1** Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by (i) $x + 1$ (ii) $x - \frac{1}{2}$ (iii) x (iv) $x + \pi$ (v) $5 + 2x$ Watch Free Video Solution on Doubtnut
11	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.3 - Q 2** Find the remainder when $x^3 - ax^2 + 6x - a$ is divided by $x - a$. Watch Free Video Solution on Doubtnut

12	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.3 - Q 3** Check whether $7+3x$ is a factor of $3x^3+7x$. Watch Free Video Solution on Doubtnut
13	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.4 - Q 1** Determine which of the following polynomials has $(x+1)$ a factor. (i) x^3+x^2+x+1 (ii) $x^4+x^3+x^2+x+1$ (iii) $x^4+3x^3+3x^2+x+1$ (iv) $x^3-x^2-\left(2+\sqrt{2}\right)x+\sqrt{2}$ Watch Free Video Solution on Doubtnut
14	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.4 - Q 2** Use the Factor Theorem to determine whether g(x) is a factor of p(x) in each of the following cases: (i) $p(x)=2x^3+x^2-2x-1, g(x)=x+1$ (ii) $p(x)=x^3+3x^2+3x+1, g(x)=x+2$ (iii) $p(x)=x^3+4x^2+x+6, g(x)=x-3$ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.4 - Q 3 Find the value of k, if $x-1$ is a factor of p(x) in each of the following cases: (i) $p(x)=x^2+x+k$ (ii) $p(x)=2x^2+kx+\sqrt{2}$ (iii)

15	$p(x) = kx^2 - \sqrt{2}x + 1$ (iv) $p(x) = kx^2 - 3x + k$ Watch Free Video Solution on Doubtnut
16	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.4 - Q 4** Factorise: (i) $12x^2 - 7x + 1$ (ii) $2x^2 + 7x + 3$ (iii) $6x^2 + 5x - 6$ (iv) $3x^2 - x - 4$ Watch Free Video Solution on Doubtnut
17	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.4 - Q 5** Factorise: (i) $x^3 - 2x^2 - x + 2$ (ii) $x^3 - 3x^2 - 9x - 5$ (iii) $x^3 + 13x^2 + 32x + 20$ (iv) $2y^3 + y^2 - 2y - 1$ Watch Free Video Solution on Doubtnut
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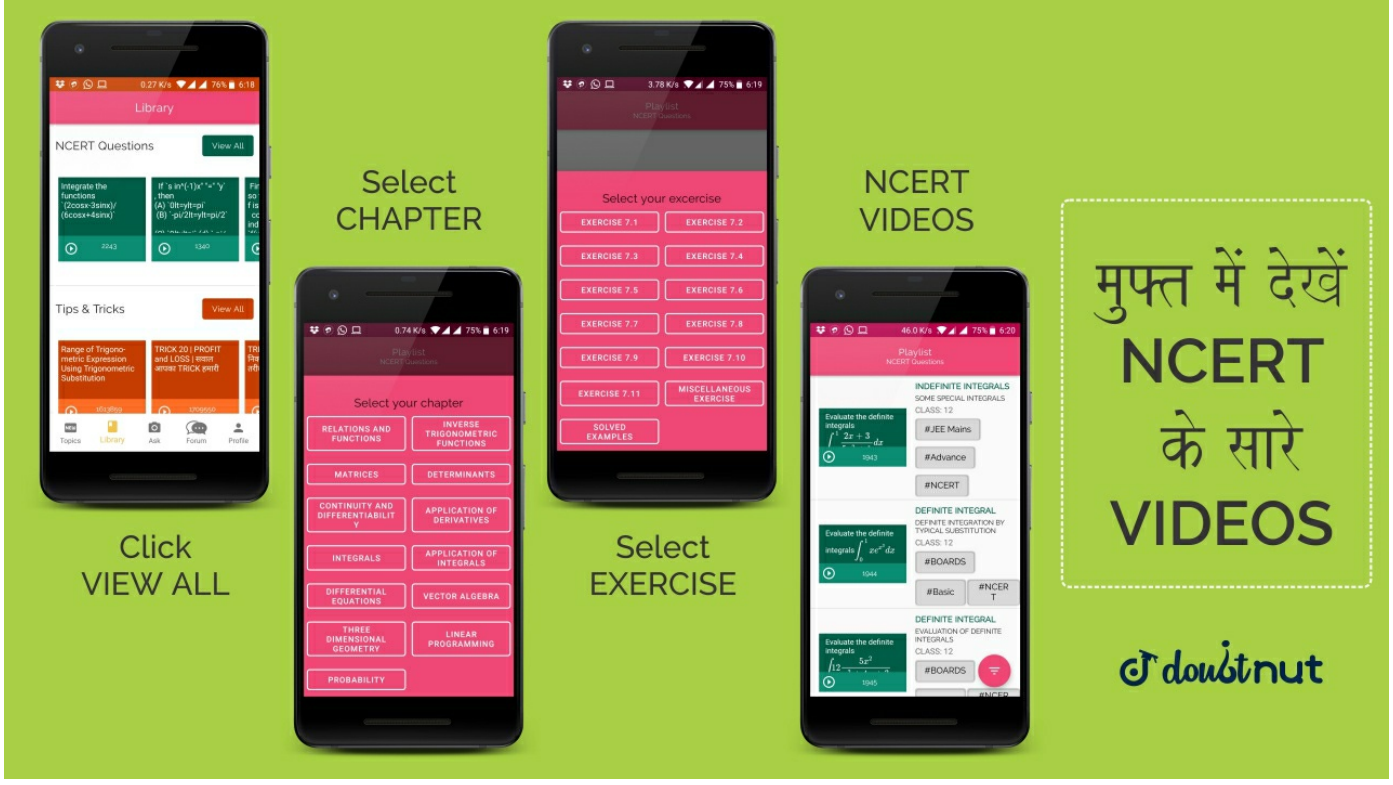
18	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 1** Use suitable identities to find the following products: (i) $(x + 4)(x + 10)$ (ii) $(x + 8)(x - 10)$ (iii) $(3x + 4)(3x - 5)$ (iv) $\left(y^2 + \frac{3}{2}\right)\left(y^2 - \frac{3}{2}\right)$ (v) $(3 - 2x)(3 + 2x)$ Watch Free Video Solution on Doubtnut

19	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 2** Evaluate the following products without multiplying directly: (i) 103×107 (ii) 95×96 (iii) 104×96 Watch Free Video Solution on Doubtnut
20	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 3** Factorise the following using appropriate identities: (i) $9x^2 + 6xy + y^2$ (ii) $4x^2 - 4y + 1$ (iii) $x^2 - \frac{y^2}{100}$ Watch Free Video Solution on Doubtnut
21	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 4** Expand each of the following, using suitable identities: (i) $(x + 2y + 4z)^2$ (ii) $(2x - y + z)^2$ (iii) $(-2x + 3y + 2z)^2$ (iv) $(3a - 7b - c)^2$ (v) $(-2x + 5y - 3z)^2$ (vi) $\left[\frac{1}{4}a - \frac{1}{2}b + 1\right]^2$ Watch Free Video Solution on Doubtnut
22	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 5** Factorise: (i) $4x^2 + 9y^2 + 16z^2$ $+ 12xy - 24yz$ $- 16xz$ (ii) $2x^2 + y^2 + 8z^2$ $- 2\sqrt{2}xy + 4\sqrt{2}yz$ $- 8xz$ Watch Free Video Solution on Doubtnut
23	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 6** Write the following cubes in expanded form: (i) $(2x + 1)^3$ (ii) $(2a - 3b)^3$ (iii) $\left[\frac{3}{2}x + 1\right]^3$ (iv) $\left[x - \frac{2}{3}y\right]^3$ Watch Free Video Solution on Doubtnut



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NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 7

Evaluate the following using suitable identities:
(i)
$(99$
$)^2$ $(ii$
$)\quad (102)^3$
$(iii)(998)^3$

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NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 8

Factorise each of the following: (i)
$8a^3 + b^3 + 12a^2b$
$+ 6ab^2$
(ii)
$8a^3 - b^3 - 12a^2b$
$+ 6ab^2$
(iii)
$27 - 125b^3 - 135a$
$+ 225a^2$
(iv)
$64a^3 - 27a^3$
$- 144a^2b + 108ab^2$
(v)
$27p^3 - \frac{1}{216} - \frac{9}{2}p^2$
$+ \frac{1}{4}p$

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NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 9

Verify : (i)

26	$x^3 + y^3$ $= (x + y)\left(x^2 - xy + y^2\right)$ (ii) $x^3 - y^3$ $= (x - y)\left(x^2 + xy + y^2\right)$ Watch Free Video Solution on Doubtnut
27	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 10** Factorise each of the following: (i) $27y^3 + 125z^3$ (ii) $64m^3 - 343n^3$ Watch Free Video Solution on Doubtnut
28	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 11** Factorise: $27x^3 + y^3 + z^3$ $- 9xyz$ Watch Free Video Solution on Doubtnut
29	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 12** Verify that: $x^3 + y^3 + z^3 - 3xyz$ $= \frac{1}{2}(x + y + z)\left[(x - y)^2 + (y - z)^2 + (z - x)^2\right]$ Watch Free Video Solution on Doubtnut

30	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 13** If $x+y+z=0$ show that $x^3+y^3+z^3=3xyz$. Watch Free Video Solution on Doubtnut
31	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 14** Without actually calculating the cubes, find the value of each of the following: (i) $(-12)^3+(7)^3$ $+(5)^3$ (ii) $(28)^3+(-15)^3$ $+(-13)^3$ Watch Free Video Solution on Doubtnut
32	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 15** Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given: Area: $25a^2-35a+12$ Area: $35y^2+13y-12$ (i) (ii) Watch Free Video Solution on Doubtnut
33	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - EXERCISE 2.5 - Q 16** What are the possible expressions for the dimensions of the cuboids whose volumes are given below? (i) Volume: $3x^2-12x$ (ii) Volume: $12ky^2+8kx-20k$ Watch Free Video Solution on Doubtnut
	NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 1 Find the degree of each of the polynomials given below: (i) x^5-x^4+3 (ii)

34	$2 - y^2 - y^3 + 2y^8$ (iii) 2 Watch Free Video Solution on Doubtnut
35	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 2** Find the value of each of the following polynomials at the indicated value of variables: (i) $p(x) = 5x^2 - 3x$ $+ 7$ at $x = 1$ (ii) $q(y) = 3y^3 - 4y$ $+ \sqrt{11}$ at $y = 2$ (iii) $p(t) = 4t^4 + 5t^3$ $- t^2 + 6$ at $t = a$ Watch Free Video Solution on Doubtnut
	Watch Free Video Solution on Doubtnut
	
36	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 3** Check whether $-2\backslash \quad and\backslash \quad 2$ are zeroes of the polynomial $x + 2$. Watch Free Video Solution on Doubtnut
37	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 4** Find a zero of the polynomial $p(x) = 2x + 1$. Watch Free Video Solution on Doubtnut
38	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 5** Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2x$. Watch Free Video Solution on Doubtnut

39	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 6** Divide $p(x)$ by $g(x)$, where p(x) = $p(x) = x + 3x^2 - 1$ and $g(x) = 1 + x$ Watch Free Video Solution on Doubtnut
40	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 7** Divide the polynomial $3x^4 - 4x^3 - 3x - 1$ by $x - 1$ Watch Free Video Solution on Doubtnut
41	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 8** Find the remainder obtained on dividing $p(x) = x^3 + 1$ by $x + 1$ Watch Free Video Solution on Doubtnut
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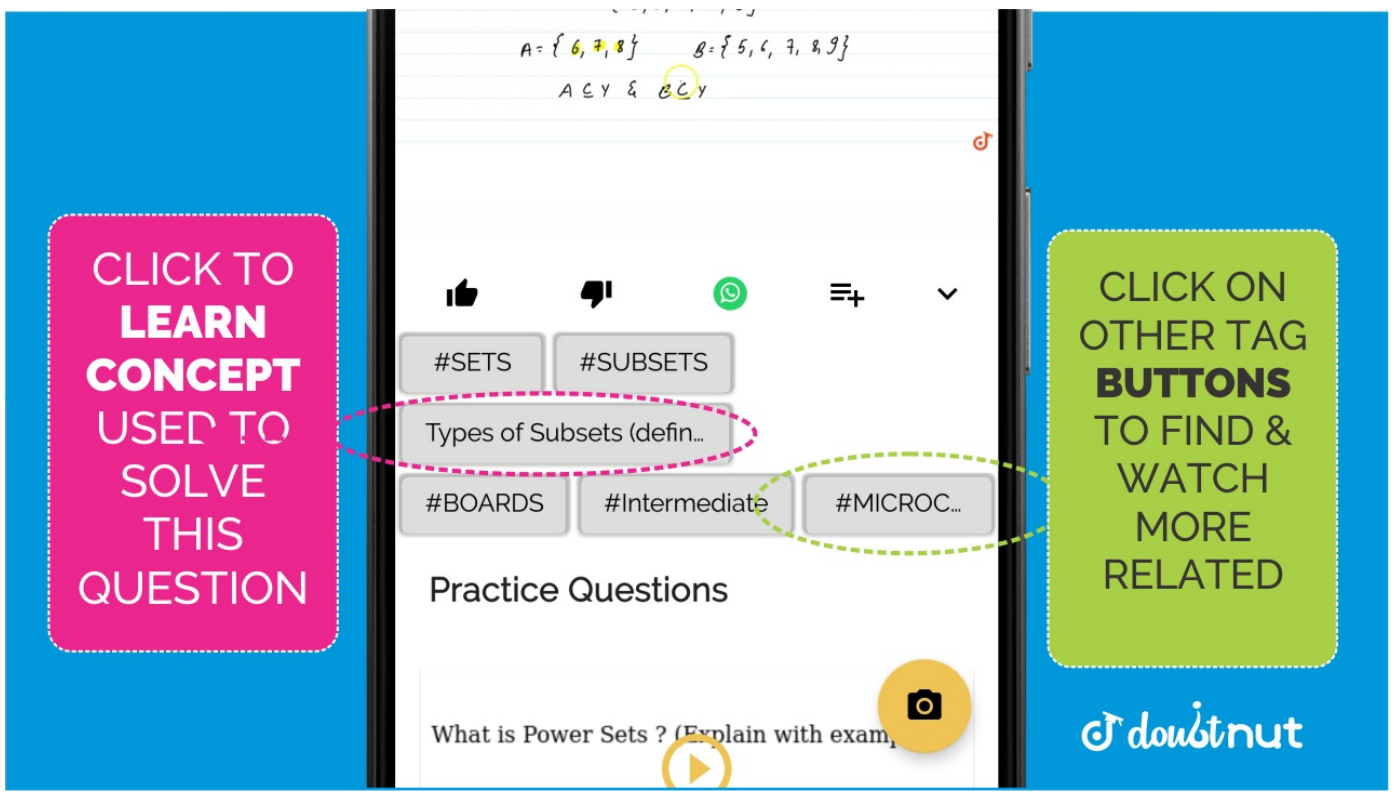
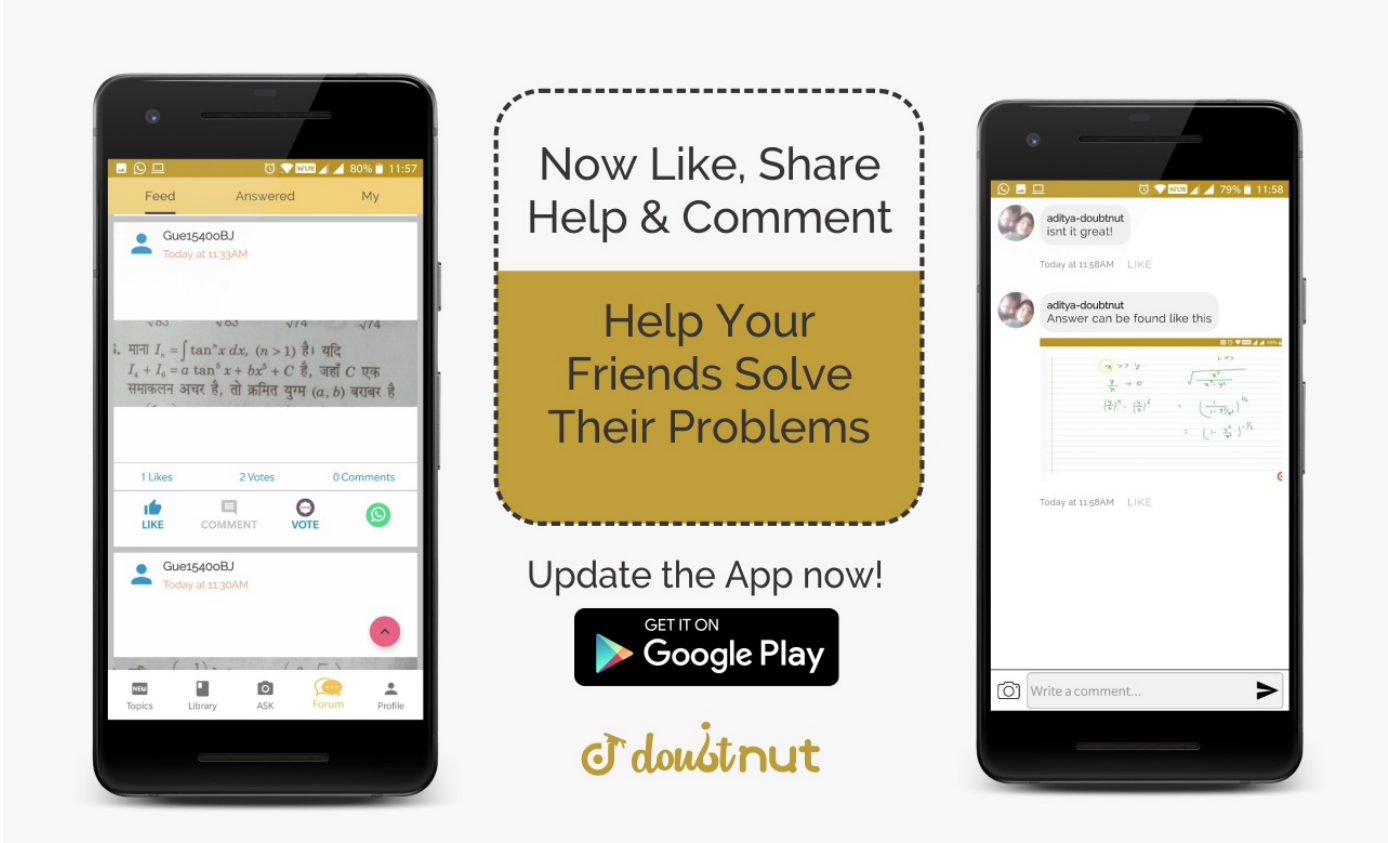
42	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 9** Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $x - 1$. Watch Free Video Solution on Doubtnut
43	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 10** Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$ Watch Free Video Solution on Doubtnut

44	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 11** Examine whether $x+2$ is a factor of x^3+3x^2+5x+6 and of $2x+4$. Watch Free Video Solution on Doubtnut
45	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 12** Find the value of k, if $x-1$ is a factor of $4x^3+3x^2-4x+k$. Watch Free Video Solution on Doubtnut
46	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 13** Factorise $6x^2+17x+5$ by splitting the middle term, and by using the Factor Theorem. Watch Free Video Solution on Doubtnut
47	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 14** Factorise y^2-5y+6 by using the Factor Theorem. Watch Free Video Solution on Doubtnut
	
48	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 15** Factorise x^3-23x^2+142x -120 . Watch Free Video Solution on Doubtnut

49	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 16** Find the following products using appropriate identities: $(i)\ (x+3)\ \ (x+3)$ $(ii)\ \ (x3)(x$ $+5)$ Watch Free Video Solution on Doubtnut
50	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 17** Evaluate 105×106 without multiplying directly. Watch Free Video Solution on Doubtnut
51	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 18** Factorise: (i) $49a^2 + 70ab + 25b^2$ (ii) $\frac{25}{4}x^2 - \frac{y^2}{9}$ Watch Free Video Solution on Doubtnut
52	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 19** Write $(3a\ \ +\ \ 4b\ \ +\ \ 5c)^2$ in expanded form. Watch Free Video Solution on Doubtnut
53	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 20** Expand $(4a-2b-3c)^2$ Watch Free Video Solution on Doubtnut



54	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 21** Factorise $4x^2 + y^2 + z^2 - 4xy$ $- 3yz + 4xz$. Watch Free Video Solution on Doubtnut
55	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 22** Write the following cubes in the expanded form: $(i)(3a + 4b)^3$ $(ii) \quad (5p - 3q)^3$ Watch Free Video Solution on Doubtnut
56	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 23** Evaluate each of the following using suitable identities: (i) $(104)^3$ (ii) $(999)^3$ Watch Free Video Solution on Doubtnut
57	**NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 24** Factorise $8x^3 + 27y^3 + 36x^2y$ $+ 54xy^2$. Watch Free Video Solution on Doubtnut
	NCERT - CLASS 9 - CHAPTER 2 POLYNOMIALS - SOLVED EXAMPLES - Q 25

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Factorise :
$8x^3 + y^3 + 27z^3$
$- 18xyx$

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