

JK PUBLIC SCHOOL KUNJWANI

Q:1. Prove that \sqrt{n} is always an irrational number where 'n' is a prime number or a non perfect square.

Q:2. If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be $x + a$. find the values of k and a

Q:3. Apply the division algorithm to find the quotient and remainder on dividing $f(x)$ by $g(x)$ as given below.

(i) $f(x) = x^4 - 3x^2 + 4x + 5$, $g(x) = x^2 + 1 - x$

(ii) $f(x) = x^4 - 5x + 6$, $g(x) = 2 - x^2$

Q:3. Divide $p(x)$ by $g(x)$ and verify the division algorithm in each of the following cases.

(i) $p(x) = 11x^2 - 9x + 7$, $g(x) = x^2 + 1$

(ii) $p(x) = 1 + 2x - x^3 + 7x^2$, $g(x) = x + 1 - x^2$

Q:4. Find the axis of symmetry and vertex of the following polynomials.

(i) $x^2 - 5x + 4$ (ii) $-x^2 + 4x - 3$ (iii) $2x^2 + 4x$

Q:5. Find k so that $x^2 + 2x + k$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$. Also find all the zeroes of the two polynomials.

Q:6. Factorize : $(x^2 - 4x)(x^2 - 4x - 1) - 20$

Q:7. Find the L.C.M. of the polynomials : $90(x^2 - 5x + 6)(2x + 1)^2$ and $140(x - 3)^3(2x^2 + 15x + 7)$

Q:8. Find the H.C.F of $150(6x^2 + x - 1)(x - 3)^3$ and $84(x - 3)^2(8x^2 + 14x + 5)$. Hence find for what value of x both the polynomials vanish.

Q:9. Draw the graph of the polynomial $-x^2 + x + 2$ and find the maximum value of the polynomial.

Q:10. On GT road, three consecutive traffic lights change after 36, 42 and 72 seconds. If the lights are first switched on at 5:00am, then at what time will they change simultaneously?

Q:11. For what value of k , do the equations $4x - 5y = k$ and $2x - 3y = 12$ represent intersecting lines.

Q:12. Find the value of k for which the following equations have No Solution, $-x + py = 1$ and $px - y = 1$.

Q:13. Prove that the given numbers are irrational i) $\sqrt{13}$ ii) $3 + 2\sqrt{2}$ iii) $\sqrt{3} - \sqrt{2}$ iv) $\sqrt{13}$ v) $\frac{5\sqrt{2}}{2\sqrt{3}}$

Q:14. Solve the system of equations $y = \frac{2x}{3} + 6$ and $2y - 4x = 20$ by substitution method and verify it.

Q:15. Solve the system of equations $0.4x + 0.3y = 1.7$ and $0.7x - 0.2y = 0.8$ by elimination method and find λ , if $y = \lambda x + 5$.

Q:16. Find the greatest number which divides 2011 and 2623 leaving remainders 9 and 5 respectively.

Q:17. Find the greatest number that will divide 445, 572 and 699 leaving remainders 4, 5 and 6 respectively.

Q:18. A circular field has a circumference of 360km. Three cyclists start together and can cycle 60km, 72km, 90km a day, around the field. After how many days will they meet again at the starting point?

Q:19. A train covered a certain distance at a uniform speed. If the train would have been 6km/hr faster, it would have taken 4 hours less than the scheduled time. And if the train were slower by 6km/hr, it would have taken 6 hours more than the scheduled time. Find the distance of the journey.

- Q:20. A mason has to fit a bathroom with square marble tiles of the largest possible size. The size of the bathroom is 14.5ft by 12.5ft. What would be the size of tile in inches? How many such tiles are required?
- Q:21. When the son will be as old as the father today their ages will add up to 126 years. When the father was old as the son is today, their ages add up to 38 years. Find their present ages.
- Q:22. . Prove that $\sqrt{p} + \sqrt{q}$ is irrational, where p and q are prime positive integers.
- Q:23. The population of the village is 5000. If in a year, the number of males were to increase by 5% and that of a female by 3% annually, the population would grow to 5202 at the end of the year. Find the number of males and females in the village.
- Q:24. Prove that $\sqrt[3]{n}$ is irrational, where n is a non perfect cube.
- Q:25. A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days, and an additional charge for each day thereafter. Latika paid Rs 22 for a book kept for six days, while Anand paid Rs 16 for the book kept for four days. Find the fixed charges and the charge for each extra day.
- Q:26. There are 120 boys and 114 girls in class X of a school. Principal of the school decided as a policy matter to have maximum number of mixed sections, each section has to accommodate equal number of boys and equal number of girls. What is the maximum number of sections?
- Q:27. A railway half ticket costs half the full fare, but the reservation charges are the same on a half ticket as on a full ticket. One reserved first class ticket from the station A to B costs Rs 2530. Also, one reserved first class ticket and one reserved first class half ticket from A to B costs Rs 3810. Find the full first class fare from station A to B, and also the reservation charges for a ticket.
- Q:28. The distance between school and metro station is 300 m. Kartikay starts running from school towards metro station, while Ashu starts running from metro station to school. They meet after 4 minutes. Had Kartikay doubled his speed and Ashu reduced his speed to third of the original they would have met one minute earlier. Find their speeds.
- Q:29. In a unit-test the no. of those that passed and the no. of those that failed were in the ratio 3:1. Had 8 more appeared and 6 less passed, the ratio of passes to failures would have been 2:1. Find how many appeared?
- Q:30. .During a sale, colour pencils were being sold in packs of 24 each and crayons in packs of 32 each. If you want full packs of both and the same number of pencils and crayons, how many of each would you need to buy?

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NOTE :- Home Work is to be done in a separate practice notebook.

Do all questions for a revision test after the vacations.