

APS KALUCHAK

CLASS-9TH MATHS HOLIDAYS HOME WORK

Session-2016-17

- Q1 Find the remainder when $4x^3 - 3x^2 + 2x - 4$ is divided by $x+2$.
- Q2 Using factor theorem show that $(x+1)$ is a factor of $x^{19} + 1$.
- Q3 Factorise: $x^2 + \frac{x}{4} - \frac{1}{8}$.
- Q4 If $2x+3y=8$ and $xy=4$, then find the value of $4x^2 + 9y^2$.
- Q5 If $x^2 + \frac{1}{x^2} = 38$, then find the value of $\left(x - \frac{1}{x}\right)$.
- Q6 Factorise: $125x^3 + 27y^3$
- Q7 Factorise: $16x^2 + 4y^2 + 9z^2 - 16xy - 12yz + 24xz$
- Q8 Find the value of $x^3 + y^3 - 12xy + 64$ when $x+y = -4$
- Q9 Factorise: $27(x+y)^3 - 8(x-y)^3$
- Q10 Factorise: $(x-2y)^3 + (2y-3z)^3 + (3z-x)^3$
- Q11 Find the values of a and b so that the polynomial $x^3 + 10x^2 + ax + b$ has $(x-1)$ and $(x+2)$ as factors.
- Q12 If $a^2 + b^2 + c^2 = 90$ and $a+b+c = 20$, then find the value of $ab + bc + ca$.
- Q13 Factorise: $64a^3 - 27b^3 - 144a^2b + 108ab^2$
- Q14 Determine whether $(3x-2)$ is a factor of $3x^3 + x^2 - 20x + 12$?
- Q15 With finding the cubes, find the value of:
- $$\left(\frac{1}{4}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{7}{12}\right)^3.$$
- Q16 Factorise: $4(x^2 + 1)^2 + 13(x^2 + 1) - 12$
- Q17 Simplify by the method of factorization
- $$\frac{9 - 2\sqrt{3}x - x^2}{3 - x^2}$$
- Q18 Factorise: $7\sqrt{2}x^2 - 10x - 4\sqrt{2}$
- Q19 Find the product:
- $$(2x - y + 3z)(4x^2 + y^2 + 9z^2 + 2xy + 3yz - 6xz)$$
- Q20 Simplify: $(a+b+c)^2 + (a-b+c)^2 + (a+b-c)^2$
- Q21 Express $1.\overline{323}$ in the form of $\frac{p}{q}$, where p and q are integer and $q \neq 0$.

Q22 If $x = 3 + 2\sqrt{2}$, find the value of $x + \frac{1}{x}$.

Q23 Simplify: $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$.

Q24 Simplify $\sqrt[4]{\sqrt[3]{x^2}}$ and express the result in the exponential form of x.

Q25 If $\frac{\sqrt{2}-\sqrt{5}}{\sqrt{2}+\sqrt{5}} = a + b\sqrt{10}$, find the values of a and b.

Q26 Express $3.4\overline{25}$ in the form of $\frac{p}{q}$, where p and q are integer and $q \neq 0$.

Q27 Simplify the following by rationalizing the denominators

$$\frac{1}{\sqrt{6}+\sqrt{5}} - \frac{2}{\sqrt{5}+\sqrt{7}} - \frac{1}{\sqrt{7}+\sqrt{6}}$$

Q28 Simplify: $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}$.

Q29 Find the $\sqrt{4.2}$ geometrically.

Q30 Express $\frac{y^2}{\sqrt{x^2+y^2+x}}$ with rational denominators.

Q31 Simplify the following by rationalizing the denominator: $\frac{\sqrt{6}-4\sqrt{3}}{\sqrt{6}+4\sqrt{3}}$

Q32 Locate $\sqrt{7}$ on a number line using square root spiral.

Q33 If $a = 7 - 4\sqrt{3}$, find the value of $(\sqrt{a} + \frac{1}{\sqrt{a}})$.

Q34 Simplify: $256^{-\left(\frac{3}{4^2}\right)}$

Q35 Find the value of:

$$\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \dots + \frac{1}{\sqrt{8}+\sqrt{9}}$$

Q36 Locate $\sqrt{8.6}$ on a number line and justify it.

Q37 Make a working model to verify the identity : $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

Q38 **Know Your Birthday**

To find on which day of the week you were born?