JK PUBLIC SCHOOL KUNJWANI

HOLIDAYS HOMEWORK -2017

CLASS :IX

SUBJECT :- MATHEMATICS

Q:1. Find the rationalizing factor of $\sqrt{5}+\sqrt{6}-\sqrt{2}$.

Q:2. If x = $\sqrt{5}-2$ then find the value of:-

(a) $x+\frac{1}{x}$ (b) $x-\frac{1}{x}$ (c) $x^2+\frac{1}{x^2}$ (d) $x^2-\frac{1}{x^2}$ (e) $x^3+\frac{1}{x^3}$ (f) $x^3-\frac{1}{x^3}$

(h) $x^4+\frac{1}{x^4}$ (i) $x^4-\frac{1}{x^4}$

Q:3. Rationalize (a) $\frac{1}{\sqrt{3}-\sqrt{2}-1}$ (b) $\frac{y^2}{\sqrt{x^2+y^2}+x}$ (c) $\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}}$

Q:4. Evaluate (a) $\left\{\sqrt{5+2\sqrt{6}}+\sqrt{8-2\sqrt{15}}\right\}$ (b) $\left[9\left(64^{\frac{1}{3}}+125^{\frac{1}{3}}\right)^3\right]^{\frac{1}{4}}$

(c) $\left(\frac{81}{16}\right)^{\frac{-3}{4}}\times\left[\left(\frac{9}{25}\right)^{\frac{3}{2}}\div\left(\frac{5}{2}\right)^{-3}\right]$

Q:5. Find the value of x. (a) $\sqrt[3]{3x-2}=4$ (b) $\sqrt[5]{5x+2}=2$ (c) $\sqrt[5]{5x+2}=2$

(d) $2^4\times2^5=\left(2^3\right)^x$

Q:6. Prove that (a) $\frac{2^{30}+2^{29}+2^{28}}{2^{31}+2^{30}-2^{29}}=\frac{7}{10}$ (b) $\left(\frac{x^l}{x^m}\right)^{\frac{1}{lm}}\times\left(\frac{x^m}{x^n}\right)^{\frac{1}{mn}}\times\left(\frac{x^n}{x^l}\right)^{\frac{1}{nl}}=1$

(c) $\frac{3^{100}+3^{101}+3^{102}}{3^{99}+3^{98}-3^{97}}=\frac{351}{11}$

Q:7. Find the value of (a) $\frac{2^{36}+\frac{1}{4}\times2^{35}+\frac{1}{8}\times2^{37}}{\frac{1}{16}\times2^{39}+\frac{1}{8}\times2^{38}}$ (b) $\frac{4}{(216)^{-2/3}}+\frac{1}{(256)^{-3/4}}+\frac{2}{(243)^{-1/5}}$

(c) $\sqrt{48}-\sqrt{72}-\sqrt{12}+2\sqrt{18}$

Q:8. Arrange in ascending order (a) $\sqrt[4]{3}$, $\sqrt[6]{7}$, $\sqrt[12]{48}$ (b) $\sqrt{3}$, $\sqrt[5]{20}$, $\sqrt[10]{310}$

(c) $\sqrt[3]{10}$, $\sqrt[4]{25}$, $\sqrt[6]{30}$

Q:9. Find ten rational numbers between $\frac{1}{6}$ and $\frac{5}{21}$.

Q:10. Find ten irrational numbers between $\sqrt{2}$ and $\sqrt{3}$.

Q:11. Simplify (i) $\frac{\sqrt{a^2-b^2}+a}{\sqrt{a^2+b^2}+b} \div \frac{\sqrt{a^2+b^2}-b}{a-\sqrt{a^2-b^2}}$ (ii) $\left(2-\sqrt{3}\right)^{-3}+\left(2+\sqrt{3}\right)^{-3}$

(iii) $(81)^{0.16}+(81)^{0.09}$

Q:12. Express in the form of $\frac{p}{q}$. (i) $0.2\overline{52}$ (ii) $1.\overline{323}$ (iii) $2.34\overline{5}$

Q:13. Find the value of z if the division of $zx^3+9x^2+4x-10$ by $x+3$ leaves a remainder -22.

Q:14. If the polynomials Kx^3+4x^2+3x-4 and x^3-4x+p are divided by $x-3$ then the remainder in each case is the same. Find the value of K.

Q:15. If the polynomials $3x^3+ax^2+3x+5$ and $4x^3+x^2-2x+a$ leave the same remainder when divided by $x-2$, then find the value of a.Also find the remainder in each case.

Q:16. If $x=\sqrt{\frac{5+2\sqrt{6}}{5-2\sqrt{6}}}$, then prove that, $x^2(x-10)^2 = 1$

Q:17. If $p(x)=3x^2-9ax+8$ and $f(x)=2a^3+8x-13$ leaves remainder R_1 and R_2. When divided by $(x-2)$.Find the value of a, if

(i) $R_1 = R_2$ (ii) $2R_1 - R_2 = 0$ (iii) $2R_1 + 3R_2 = 0$ (iv) $5R_1 = R_2$

Q:18. What must be subtracted from $x^3-6x^2-15x+80$ so that the result is exactly divisible by x^2+x-12.

Q:19. If $m = 2p+6$, then find the value of $m^3-8p^3-36mp-216$.

Q:20. Factorise (i) $a^{12}x^4 - a^4x^{12}$ (ii) $(x-2y)^3+(2y-3z)^3+(3z-x)^3$ (iii) $(2x+3y-4y)^2$

(iv)$512m^3-216n^3$ (v) x^8-y^8

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