

Delhi Public School, Jammu
Session- (2019-20)
ASSIGNMENT

Subject: Mathematics

Topics: 1. Number System

2. Polynomials

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- 1) Find five rational and five irrational numbers between $\frac{2}{3}$ and $\frac{6}{5}$
- 2) Find five rational and five irrational numbers between
 - a. $\sqrt{2}$ and $\sqrt{3}$
 - b. 2.131131113..... and 3.171171117..
- 3) Represent $\sqrt{3}$ and $\sqrt{5}$ on number line by direct method and spiral method.
- 4) Represent $\sqrt{6.5}$ and $\sqrt{9.3}$ on number line and give justification.
- 5) Represent 3.456 on number line by successive magnification.
- 6) Express as p\q (a) 3.285 (b) 2.686868.... (c) 3.2838383...
- 7) Rationalize the denominator of (a) $\frac{\sqrt{3}-\sqrt{5}}{\sqrt{3}-\sqrt{2}}$ (b) $\frac{3}{\sqrt{5}+\sqrt{3}-\sqrt{2}}$.
- 8) Find a and b if $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} = a+b\sqrt{6}$.
- 9) If $x=2+\sqrt{3}$ find $x^2+\frac{1}{x^2}$ and $x+\frac{1}{x}$.
- 10) Prove that $\frac{1}{1+x^{a-b}} + \frac{1}{1+x^{b-a}} = 1$.
- 11) Evaluate the following -
 - (i) 97^2
 - (ii) $185 \times 185 - 115 \times 115$
 - (iii) $\frac{7.33 \times 7.33 - 1.17 \times 1.17}{6.16}$
- 12) If $x + \frac{1}{x} = 11$, find the value of (i) $x^2 + \frac{1}{x^2}$ (ii) $x^4 + \frac{1}{x^4}$ (iii) $x^3 + \frac{1}{x^3}$
- 13) If $x^2 + \frac{1}{x^2} = 79$. Find the value of (i) $x^3 + \frac{1}{x^3}$ (ii) $x^3 - \frac{1}{x^3}$
- 14) Expand (i) $(x^2 + y^2 - z^2)^2 - (x^2 - y^2 + z^2)^2$ (ii) $\left(\frac{x}{y} + \frac{y}{z} + \frac{z}{x}\right)^2$
- 15) If $a + b = 10$ & $ab = 16$, find $a^2 - ab + b^2$ and $a^2 + ab + b^2$.
- 16) If $a^2 + b^2 + c^2 = 250$ & $ab + bc + ca = 3$, find $a + b + c$.
- 17) If $x^4 + \frac{1}{x^4} = 47$, find the value of $x^3 + \frac{1}{x^3}$
- 18) If $x + y + z = 8$ and $xy + yz + zx = 20$, find $x^3 + y^3 + z^3 - 3xyz$.

- 19) If $p=2-a$, prove that $a^3 + 6ap - 8 = 0$
- 20) Find 'a' and 'b', if $x=0$ and $x=-1$ are the zeroes of $p(x)=2x^3 - 3x^2 + ab + b$
- 21) what should be added to $x^3 + 3x^2 - 12x + 19$ so that the result is exactly divisible by x^2+x-6
- 22) what should be subtracted from $x^3 - 6x^2 - 15x + 80$ so that the result is exactly divisible by x^2+x-12