1. A= $\{x, y\}$ and $B = \{0, 2, 3, 5\}$ then write A X B and find the number of relations from A to B

2. If f(x) = $x^3 - \frac{1}{x^3}$ find f(x) + f($\frac{1}{x}$)

3. Express A = $\{(x, y): x^2 + y^2 = 25, x, y \in Z\}$ as the set of ordered pairs

4. Write domain of   i) $\frac{x^2+1}{x^2-9}$,   ii) $\frac{3x+1}{x^3-x}$ iii) $\frac{2x+1}{x^2-5x+4}$

5. If A X B = $\{(0,2)(1, 2), (3, 2)(4, 2)\}$ find A and B

6. A = $\{0, 1, -1\}$ and $B = \{0,3, 4\}$, write $(A - B) \times (B - A)$.

7. A relation R is defined from   A=$\{0, 1, 2,3,4,5\}$ to N as follows:
   R = $\{(x, y) \in A : y = x^2 + x - 2\}$. Write R in roster form. Also determine domain and range

8. f(x) = x², g(x) = 2x -1, Write   i) (f+g)   ii) (f.g)
   iii) $\left(\frac{f}{g}\right)$ iv) (f −g)

9. A= $\{0, 1, 23, 4\}$, B =$\{-2, -1, 0, 1, …, 10\}$ and R = $\{(0. -2), (1, 0), (2, 2), (3, 4)(4, 6)\}$. Write R using rule method

10. Find domain and range of the following real valued functions:
    i) f(x) = $|x| + 1$ ii) f(x) = $\sqrt{27 - x^2}$ iii)$f(x) = \frac{x^2}{x^2+1}$ iv) $-|x + 2|$

    v)   f(x) $= \sqrt{4 - x}$ vi) f(x) = $\sqrt{x - 4}$ vii) f(x) = x² +1

11. $f(x) = \begin{cases} 3x + 1, & 0 \le x < 3 \\ x + 1, & 3 \le x < 5 \\ x^2 - 1, & 5 \le x < 8 \end{cases}$, $x \in W$. write the function in roster form. Write
    Domain and Range of the function

12. If f(x) = $\frac{x+1}{x-1}, x \ne 1$, find i) f(3),   ii) $f(f(x))$ iii) $x, when f(x) = 3$
    iv) $\frac{f(2) + f(5)}{f(0)}$ v) Prove $f\left(\frac{1}{x}\right) = -f(x)$

13. If $f(x) = \frac{ax+b}{bx-a}$, prove that $f(f(x)) = x$

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