ASSIGNMENT: (1) INEQUALITIES

Fractional Inequation: Ineqn of the form:-

$$\frac{ax+b}{cx+d} \quad > < \quad \geq \leq \quad K$$

Q1. Solve

a) $\frac{2x+4}{x-1} \geq 5$ Ans. (1, 3]

b) $\frac{x+3}{x-2} \leq 2$ Ans. $(-\infty, 2)$ U [7, ∞)

c) $\frac{x}{x-5} > \frac{1}{2}$ Ans. $(-\infty, -5)$ U (5, ∞)

d) $\frac{7x-5}{8x+3} > 4$ Ans. $(\frac{-17}{25}, \frac{-3}{8})$

Quadratic Inequation: Ineqn of the form:-

$$ax^2+bx+c \geq \leq 0$$

Q2. a) $16-x^2 \geq 0$ Ans. [-4, 4]

b) $x^2-16 \geq 0$ Ans. (-∞, -4] U [4, ∞)

c) $9-x^2 < 0$ Ans. (-∞, -3) U (3, ∞)

d) $2x^2+7x-15 \geq 0$ Ans. $(-\infty, -5] \cup [\frac{3}{2}, \infty)$

e) $-x^2+5x-6 > 0$ Ans. (2, 3)

Modulus Inequation: Ineqn of the form:-

$$|x-a| \leq \geq K$$

a) $|x-2| \geq 5$ Ans. (-∞, -3] U [7, ∞)

b) $|3x-2| \leq \frac{1}{2}$ Ans. $[\frac{1}{2}, \frac{5}{6}]$

c) $|\frac{2}{x-4}| > 1$ Ans. (2, 6)

d) $1 \leq |x-2| \leq 3$ Ans. [-1, 1] U [3,5]

e) $|x-1|+|x-2| \geq 4$ Ans. $(-\infty, \frac{-1}{2}] \cup [\frac{7}{2}, \infty)$

f) $\frac{|2x-1|}{|x-1|} > 2$ Ans. $(\frac{3}{4}, 1) \cup (1, \infty)$