

TYRP-19 (Assignment)

Q1 Solve the following inequalities

(a)  $\frac{2}{x} < 3$

(b)  $\frac{3x-3}{3x-5} \geq 3$

(c)  $2x^3 - 7x^2 - 46x - 21x <$

(d)  $(x-1)^2(x+4) < 0$  (e)  $\frac{8x^2+46x-51}{(2x-3)(x+4)} > 3$  (f)  $\frac{x-1}{x+2} > \frac{2x-3}{4x-1}$

(g)  $\frac{2x}{2x^2+5x+2} > \frac{1}{x+1}$  (h)  $1 \leq \frac{2x+3}{5-x} \leq 7$

Q2 Find integral values of  $x$  for which  $5x-1 < (x+1)^2 < 7x-3$

Q3 Find the domain of function

(a)  $f(x) = \sqrt{4-x} + \sqrt{x-1}$  (b)  $f(x) = \sqrt{4-x} + \frac{1}{\sqrt{x^2-4}}$

(c)  $f(x) = \sqrt{\frac{x}{1-x}}$  (d)  $f(x) = \frac{1}{\sqrt{1-\cos x}}$

(e)  $f(x) = \frac{1}{\sqrt{|x|-x}}$  (f)  $f(x) = \frac{1}{\sqrt{x+|x|}}$

(g)  $f(x) = \sqrt{4+3x-x^2}$  (h)  $f(x) = \frac{\sqrt{25-x^2}}{x^2-3x+2}$

(i)  $f(x) = \frac{x^3-x+3}{x^2-1}$  (j)  $f(x) = \sqrt{\left(\frac{x+1}{x+2}\right) - \left(\frac{x-2}{x-1}\right)}$

Q4 Find the range of following functions:

(a)  $f(x) = 1 - |x-2|$  (b)  $f(x) = 1 + 3 \cos 2x$

(c)  $f(x) = \frac{3}{2-x^2}$  (d)  $f(x) = 4 + 3x - x^2$

(e)  $f(x) = \sqrt{1+x^2}$  (f)  $f(x) = \frac{1}{5-2 \sin x}$

(g)  $f(x) = \sqrt{|x-1|}$  (h)  $f(x) = \frac{2x+3}{x-1}$

(i)  $f(x) = \frac{x^2-x+1}{x^2+x+1}$  (j)  $f(x) = 2|\sin x| - 3$

Q5 If  $[x]^2 - 5[x] + 6 = 0$  where  $[ \ ]$  represents greatest integer function then find values of  $x$

Solution