

|                                       |                          |                            |
|---------------------------------------|--------------------------|----------------------------|
| Date Planned : __ / __ / __           | Daily Tutorial Sheet - 3 | Expected Duration : 90 Min |
| Actual Date of Attempt : __ / __ / __ | Level - 1                | Exact Duration : _____     |

31. Find  $x$  such that  $3x - 3 \geq x + 5$  and  $\frac{1}{x-1} \geq \frac{1}{8}$
32. Let  $f(x) = \frac{(x-3)(x+2)(x+5)}{(x+1)(x-7)}$ . Find the intervals where  $f(x)$  is positive or negative.
33. Find the solution set of  $\frac{(x-1)(x-2)^2(x+4)}{(x+2)(x-3)} \geq 0$  ▶
34. Find the solution set of  $\frac{(x-1)(x-2)(x-3)^2}{(x-4)^2(x-5)^3} < 0$  ▶
35. If  $x^2 + 6x - 27 > 0$  and  $x^2 - 3x - 4 < 0$ , then:  
**(A)**  $x > 3$                       **(B)**  $-1 < x < 4$                       **(C)**  $3 < x < 4$                       **(D)**  $x < -9$  or  $x > -1$
36. Number of integral solutions of  $\frac{x+2}{x^2+1} > \frac{1}{2}$  is :  
**(A)** 0                      **(B)** 1                      **(C)** 2                      **(D)** 3
37. The range of values of  $x$  which satisfy  $5x + 2 < 3x + 8$  and  $\frac{x+2}{x-1} < 4$  are : ▶  
**(A)**  $(-\infty, 1) \cup (2, 3)$     **(B)**  $(0, \infty)$                       **(C)**  $(-\infty, 2)$                       **(D)**  $(1, 3)$
38. If  $f(x) = \sqrt{\frac{3x-6}{x+2}} + \sqrt[4]{(x^4 - 5x^3 + 6x^2)(1-x^2)}$ , find complete values of  $x$ , for which  $f(x)$  is real. ▶
39. Solve :  $\frac{1}{x^2+x} \leq \frac{1}{2x^2+2x+3}$  ▶
40. Solve :  $\frac{x^2+x-4}{x} < 1$  and  $x^2 < 64$
41. Solve the inequality  $\frac{x-1}{x^2-4x+3} < 1$
42. Solve :  $1 \leq \frac{3x^2-7x+8}{x^2+1} \leq 2$  ▶
43. What is the solution set of the inequality  $\frac{1}{|x|-3} < \frac{1}{2}$  ?  
**(A)**  $x \in (-\infty, -3) \cup (3, \infty)$                       **(B)**  $x \in (-\infty, -5) \cup (-3, 3) \cup (5, \infty)$   
**(C)**  $x \in (-\infty, -5) \cup (3, \infty)$                       **(D)**  $x \in (-\infty, -3) \cup (5, \infty)$
44. The solution set of  $|x^2 + 3x| + x^2 - 2 \geq 0$  is  $x \in$  : ▶  
**(A)**  $(-\infty, -3] \cup \left[\frac{-2}{3}, \infty\right)$                       **(B)**  $\left(-\infty, \frac{1}{2}\right] \cup \left[\frac{2}{3}, \infty\right)$   
**(C)**  $\left(-\infty, \frac{-2}{3}\right] \cup \left[\frac{1}{2}, \infty\right)$                       **(D)** None of these
45. The solution set of  $||x| - 1| < |1 - x|$ ,  $x \in R$  is  $x \in$  : ▶  
**(A)**  $(-1, 1)$                       **(B)**  $(0, \infty)$                       **(C)**  $(-1, \infty)$                       **(D)**  $(-\infty, 0)$