

Math 251 L02 Fall 2004 Thurs. Lab.

Quiz # 1 Duration: 35 minutes

[Marks] Total marks = 30

Solve the following inequalities. Express your answers in interval notation.

[3] 1.  $x^2 > 4x - 3$

[4] 2.  $x^2 - 4|x| < 0$

[7] 3.  $|x+3| \geq 5x+5$

[9] 4.  $\frac{x+3}{x+5} > \frac{-1}{x-1}$

[7] 5.  $|5-2x| < 3x-10$

Math 251 LO2 Fall 2004 Tuesday Lab.

Quiz # 1

Duration: 35 minutes

[Marks] Total marks = 30

Solve the following inequalities. Express your answers in interval notation.

[3] 1.  $x^2 < 3x - 2$

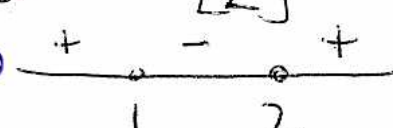
[4] 2.  $x^2 - 2|x| > 0$

[7] 3.  $|3 - 2x| < 3x - 7$

[9] 4.  $\frac{x}{x+2} \leq \frac{-1}{x-4}$

[7] 5.  $|x+4| > 5x$

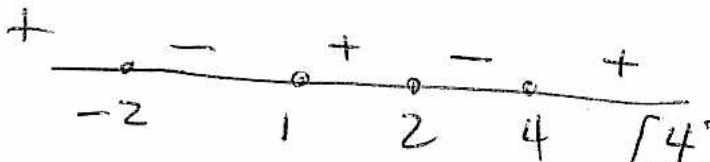
Quiz # 1 Solutions [marks]

1.  $x^2 - 3x + 2 < 0$  [2] Sol Set =  $(1, 2)$  [1]  
 $(x-2)(x-1) < 0$  

2. For  $x > 0$   $x(x-2) > 0 \Rightarrow x > 2$  [2]  
 For  $x < 0$   $x(x+2) > 0 \Rightarrow x < -2$  [2]  
 S.S. =  $(-\infty, -2) \cup (2, \infty)$  [2]


3.  $-(3x-7) < 3-2x < 3x-7$  [1]  
 $4 < x$  [2]  $5x > 10$   
 $x > 2$  [2] S.S. =  $(4, \infty)$  [2]

4.  $\frac{x}{x+2} + \frac{1}{x-4} = 0$   
 $\frac{x^2 - 3x + 2}{(x+2)(x-4)} = \frac{(x-2)(x-1)}{(x+2)(x-4)} \leq 0$  [3]

 [4] S.S. =  $(-2, 1] \cup [2, 4)$  [2]

5.  $x+4 > 5x$   $x < 1$  [2]  
 $x+4 < -5x$   $x < -\frac{2}{3}$  [3]  
 S.S. =  $(-\infty, 1)$  [2]

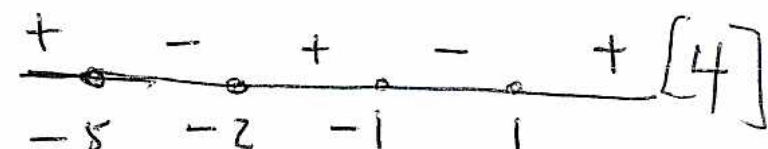
Math 251 L02 Fall 2004 Thurs. Lab.  
 Quiz # 1 Solutions [Marks]

1.  $x^2 - 4x + 3 > 0$  [2]  
 $(x-3)(x-1) > 0$   S.S. =  $(-\infty, 1) \cup (3, \infty)$  [1]

2.  $x > 0$   $x(x-4) < 0 \Rightarrow 0 < x < 4$   
 $x < 0$   $x(x+4) < 0 \Rightarrow -4 < x < 0$  [2]  
 S.S. =  $(-4, 0) \cup (0, 4)$ . [2]

3.  $x+3 \geq 5x+5$   $4x \leq -2$   $x \leq -\frac{1}{2}$  [2]  
 $x+3 \leq -5x-5$   $6x \leq -8$   $x \leq -\frac{4}{3}$  [3]  
 S.S. =  $(-\infty, -\frac{1}{2}]$  [2]

4.  $\frac{x+3}{x+5} + \frac{1}{x-1} > 0$

[3]  $\frac{(x+2)(x+1)}{(x+5)(x-1)} > 0$   [4]

S.S. =  $(-\infty, -5) \cup (-2, -1) \cup (1, \infty)$  [2]

5.  $-(3x-10) < 5-2x < 3x-10$  [1]

$5 < x$   
 [2]

$15 < 5x$   
 $x > 3$  [2]

S.S. =  $(5, \infty)$  [2]