CÁLCULO DIFERENCIAL E INTEGRAL I
LEIC-TAGUS, LERCI, LEGI E LEE – 1º SEM. 2006/07
1ª FICHA DE EXERCÍCIOS

1. Mostre que:

1.1. $\{x \in \mathbb{R} : |x+2| = 3\} = \{-5, 1\}$

1.2. $\{x \in \mathbb{R} : |x+2| \leq 1\} = [-3, -1]$

1.3. $\{x \in \mathbb{R} : |3-x| > 2\} =]-\infty, 1[\cup]5, +\infty[$

1.4. $\{x \in \mathbb{R} : 2 < |x| < 3\} =]-3, -2[\cup]2, 3[$

1.5. $\{x \in \mathbb{R} : 3 < 2|x-1| \leq 5\} = \left[-\frac{3}{2}, -\frac{1}{2}\right[\cup \left]\frac{5}{2}, \frac{7}{2}\right]$

1.6. $\{x \in \mathbb{R} : |x-3| > 2 \ \wedge \ x \geq 0\} = [0, 1[\cup]5, +\infty[$

1.7. $\{x \in \mathbb{R} : |x+2| \leq 3 \ \wedge \ x+1 > 0\} =]-1, 1]$

1.8. $\{x \in \mathbb{R} : |3-4x| < 1\} = \left]\frac{1}{2}, 1\right[$

1.9. $\{x \in \mathbb{R} : |4x+3| > 1\} =]-\infty, -1[\cup \left]-\frac{1}{2}, +\infty\right[$

1.10. $\{x \in \mathbb{R} : |5-3x| \leq 2\} = \left[1, \frac{7}{3}\right]$

1.11. $\{x \in \mathbb{R} : |5+3x| \geq 2\} = \left]-\infty, -\frac{7}{3}\right] \cup [-1, +\infty[$

1.12. $\{x \in \mathbb{R} : |4x+1| > 5\} = \left]-\infty, -\frac{3}{2}\right[\cup]1, +\infty[$

1.13. $\{x \in \mathbb{R} : |1-4x| < 5\} = \left]-1, \frac{3}{2}\right[$

1.14. $\{x \in \mathbb{R} : |5x+2| \geq 3\} =]-\infty, -1] \cup \left[\frac{1}{5}, +\infty\right[$

1.15. $\{x \in \mathbb{R} : |2-5x| \leq 3\} = \left[-\frac{1}{5}, 1\right]$

1.16. $\{x \in \mathbb{R} : |3x-4| \leq 1\} = \left[1, \frac{5}{3}\right]$

1.17. $\{x \in \mathbb{R} : |3x+4| \geq 1\} = \left]-\infty, -\frac{5}{3}\right] \cup [-1, +\infty[$

1.18. $\{x \in \mathbb{R} : |2x+3| > 5\} =]-\infty, -4[\cup]1, +\infty[$

1.19. $\{x \in \mathbb{R} : |3-2x| < 5\} =]-1, 4[$

1.20. $\{x \in \mathbb{R} : |2-3x| < 1\} = \left]\frac{1}{3}, 1\right[$

1.21. $\{x \in \mathbb{R} : |2+3x| > 1\} =]-\infty, -1[\cup \left]-\frac{1}{3}, +\infty\right[$

1.22. $\{x \in \mathbb{R} : |5x-4| \leq 1\} = \left[\frac{3}{5}, 1\right]$

1.23. $\{x \in \mathbb{R} : |5x+4| \geq 1\} =]-\infty, -1] \cup \left[-\frac{3}{5}, +\infty\right[$

1.24. $\{x \in \mathbb{R} : |5-2x| < 1\} =]2, 3[$

1.25. $\{x \in \mathbb{R} : |2x+5| > 1\} =]-\infty, -3[\cup]-2, +\infty[$

1.26. $\{x \in \mathbb{R} : |5-6x| \leq 1\} = \left[\frac{2}{3}, 1\right]$

1.27. $\{x \in \mathbb{R} : |6x-5| > 1\} = \left]-\infty, \frac{2}{3}\right[\cup]1, +\infty[$

1.28. $\{x \in \mathbb{R} : |9-2x| < 1\} =]4, 5[$

1.29. $\{x \in \mathbb{R} : |2x-9| \geq 1\} =]-\infty, 4] \cup [5, +\infty[$

1.30. $\{x \in \mathbb{R} : |4-3x| < 8\} = \left]-\frac{4}{3}, 4\right[$

1.31. $\{x \in \mathbb{R} : |3x-4| \geq 8\} = \left]-\infty, -\frac{4}{3}\right] \cup [4, +\infty[$

1.32. $\{x \in \mathbb{R} : |3-4x| \leq 7\} = \left[-1, \frac{5}{2}\right]$

1.33. $\{x \in \mathbb{R} : |4x-3| > 7\} =]-\infty, -1[\cup \left]\frac{5}{2}, +\infty\right[$

1.34. $\{x \in \mathbb{R} : |7-2x| \leq 1\} = [3, 4]$

1.35. $\{x \in \mathbb{R} : |2x-7| > 1\} =]-\infty, 3[\cup]4, +\infty[$

1.36. $\{x \in \mathbb{R} : |5-2x| < 9\} =]-2, 7[$

1.37. $\{x \in \mathbb{R} : |2x-5| \geq 9\} =]-\infty, -2] \cup [7, +\infty[$

1.38. $\{x \in \mathbb{R} : |5-3x| < 1\} = \left]\frac{4}{3}, 2\right[$

1.39. $\{x \in \mathbb{R} : |3x-5| \geq 1\} = \left]-\infty, \frac{4}{3}\right] \cup [2, +\infty[$

1.40. $\{x \in \mathbb{R} : 2 < 3|x+1| \leq 5\} = \left[-\frac{8}{3}, -\frac{5}{3}\right[\cup \left]-\frac{1}{3}, \frac{2}{3}\right]$

2. Mostre que:

2.1. $\{x \in \mathbb{R} : |3 - 2x| \geq |x + 2|\} = \left]-\infty, \frac{1}{3}\right] \cup [5, +\infty[$

2.2. $\{x \in \mathbb{R} : |x| = |x - 2|\} = \{1\}$

2.3. $\{x \in \mathbb{R} : |x| \leq |x - 2|\} =]-\infty, 1]$

2.4. $\{x \in \mathbb{R} : |2x - 5| \geq |1 - x|\} =]-\infty, 2] \cup [4, +\infty[$

2.5. $\{x \in \mathbb{R} : |6x - 5| < |1 - 8x|\} = \left]-\infty, -2\right[\cup \left]\frac{3}{7}, +\infty\right[$

2.6. $\{x \in \mathbb{R} : |5 - 6x| \geq |8x - 1|\} = \left[-2, \frac{3}{7}\right]$

2.7. $\{x \in \mathbb{R} : |2x - 9| < |1 - 8x|\} = \left]-\infty, -\frac{4}{3}\right[\cup]1, +\infty[$

2.8. $\{x \in \mathbb{R} : |9 - 2x| \geq |8x - 1|\} = \left[-\frac{4}{3}, 1\right]$

2.9. $\{x \in \mathbb{R} : |3x - 4| \leq |8 - 9x|\} = \left]-\infty, \frac{2}{3}\right] \cup [1, +\infty[$

2.10. $\{x \in \mathbb{R} : |4 - 3x| > |9x - 8|\} = \left]\frac{2}{3}, 1\right[$

2.11. $\{x \in \mathbb{R} : |4x - 3| < |7 - 6x|\} =]-\infty, 1[\cup]2, +\infty[$

2.12. $\{x \in \mathbb{R} : |3 - 4x| \geq |6x - 7|\} = [1, 2]$

2.13. $\{x \in \mathbb{R} : |2x - 7| < |1 - 6x|\} = \left]-\infty, -\frac{3}{2}\right[\cup]1, +\infty[$

2.14. $\{x \in \mathbb{R} : |7 - 2x| \geq |6x - 1|\} = \left[-\frac{3}{2}, 1\right]$

2.15. $\{x \in \mathbb{R} : |2x - 5| \leq |9 - 4x|\} =]-\infty, 2] \cup \left[\frac{7}{3}, +\infty\right[$

2.16. $\{x \in \mathbb{R} : |5 - 2x| > |4x - 9|\} = \left]2, \frac{7}{3}\right[$

2.17. $\{x \in \mathbb{R} : |3x - 5| \leq |1 - 4x|\} =]-\infty, -4] \cup \left[\frac{6}{7}, +\infty\right[$

2.18. $\{x \in \mathbb{R} : |5 - 3x| > |4x - 1|\} = \left]-4, \frac{6}{7}\right[$

2.19. $\{x \in \mathbb{R} : 3|2 - x| \leq |x|\} = \left[\frac{3}{2}, 3\right]$

2.20. $\{x \in \mathbb{R} : 3|x - 2| > |x|\} = \left]-\infty, \frac{3}{2}\right[\cup]3, +\infty[$

2.21. $\{x \in \mathbb{R} : |4x - 9| \geq |6 - x|\} =]-\infty, 1] \cup [3, +\infty[$

2.22. $\{x \in \mathbb{R} : |9 - 4x| < |6 - x|\} =]1, 3[$

2.23. $\{x \in \mathbb{R} : |3x + 4| \leq |x + 8|\} = [-3, 2]$

2.24. $\{x \in \mathbb{R} : |3x + 4| > |x + 8|\} =]-\infty, -3[\cup]2, +\infty[$

2.25. $\{x \in \mathbb{R} : |5x - 2| \geq |x + 2|\} =]-\infty, 0] \cup [1, +\infty[$

2.26. $\{x \in \mathbb{R} : |2 - 5x| < |x + 2|\} =]0, 1[$

2.27. $\{x \in \mathbb{R} : |7 - 4x| \leq |2x + 1|\} = [1, 4]$

2.28. $\{x \in \mathbb{R} : |4x - 7| > |2x + 1|\} =]-\infty, 1[\cup]4, +\infty[$

2.29. $\{x \in \mathbb{R} : |5x - 4| \geq |x + 4|\} =]-\infty, 0] \cup [2, +\infty[$

2.30. $\{x \in \mathbb{R} : |4 - 5x| < |x + 4|\} =]0, 2[$

2.31. $\{x \in \mathbb{R} : |7 - 2x| \leq |x + 1|\} = [2, 8]$

2.32. $\{x \in \mathbb{R} : |2x - 7| > |x + 1|\} =]-\infty, 2[\cup]8, +\infty[$

2.33. $\{x \in \mathbb{R} : |5 - 2x| < |x - 1|\} =]2, 4[$

2.34. $\{x \in \mathbb{R} : |2 - x| \geq |3 + 2x|\} = \left[-5, -\frac{1}{3}\right]$

2.35. $\{x \in \mathbb{R} : |3 - 5x| < |7x - 6|\} = \left]-\infty, \frac{3}{4}\right[\cup \left]\frac{3}{2}, +\infty\right[$

2.36. $\{x \in \mathbb{R} : |5x - 3| \geq |6 - 7x|\} = \left[\frac{3}{4}, \frac{3}{2}\right]$

2.37. $\{x \in \mathbb{R} : |3x - 2| > |4 - 9x|\} = \left]\frac{1}{3}, \frac{1}{2}\right[$

2.38. $\{x \in \mathbb{R} : |2 - 3x| \leq |9x - 4|\} = \left]-\infty, \frac{1}{3}\right] \cup \left[\frac{1}{2}, +\infty\right[$

2.39. $\{x \in \mathbb{R} : |2x - 5| > |4 - x|\} =]-\infty, 1[\cup]3, +\infty[$

2.40. $\{x \in \mathbb{R} : |5 - 2x| \leq |x - 4|\} = [1, 3]$

3. Mostre que:

3.1. $\{x \in \mathbb{R} \ : \ 4 < x^2 < 9\} = \ ]-3,-2[\ \cup \ ]2,3[$

3.2. $\{x \in \mathbb{R} \ : \ 9 \le (x-1)^2 < 25\} = \ ]-4,-2] \cup [4,6[$

3.3. $\{x \in \mathbb{R} \ : \ x^2 - 1 > 0 \ \wedge \ x - 3 \le 0\} = \ ]-\infty,-1[\ \cup \ ]1,3]$

3.4. $\{x \in \mathbb{R} \ : \ x^2 - 4 \le 0 \ \wedge \ x + 1 > 0\} = \ ]-1,2]$

3.5. $\{x \in \mathbb{R} \ : \ x^2 - 2x - 3 \ge 0\} = \ ]-\infty,-1] \cup [3,+\infty[$

3.6. $\{x \in \mathbb{R} \ : \ 2 - x - x^2 > 0\} = \ ]-2,1[$

3.7. $\{x \in \mathbb{R} \ : \ |x^2 - 2| \le 1\} = \ \left[-\sqrt{3},-1\right] \cup \left[1,\sqrt{3}\right]$

3.8. $\{x \in \mathbb{R} \ : \ |3 - 2x + x^2| = 5\} = \ \left\{1 - \sqrt{3}, 1 + \sqrt{3}\right\}$

3.9. $\{x \in \mathbb{R} \ : \ |3 - 2x + x^2| < 5\} = \ ]1 - \sqrt{3}, 1 + \sqrt{3}[$

3.10. $\{x \in \mathbb{R} \ : \ |15 + 2x - x^2| \ge 9\} = \ ]-\infty,-4] \cup \left[1 - \sqrt{7}, 1 + \sqrt{7}\right] \cup [6,+\infty[$

3.11. $\{x \in \mathbb{R} \ : \ |x^2 + 2x - 15| < 9\} = \ ]-6,-1 - \sqrt{7}[\ \cup \ ]-1 + \sqrt{7}, 4[$

3.12. $\{x \in \mathbb{R} \ : \ |4x - 3x^2| > 1\} = \ \left]-\infty, \frac{2 - \sqrt{7}}{3}\right[\ \cup \ ]\frac{1}{3}, 1[\ \cup \ ]\frac{2 + \sqrt{7}}{3}, +\infty[$

3.13. $\{x \in \mathbb{R} \ : \ |3x^2 + 4x| \le 1\} = \ \left[\frac{-2 - \sqrt{7}}{3}, -1\right] \cup \left[-\frac{1}{3}, \frac{-2 + \sqrt{7}}{3}\right]$

3.14. $\{x \in \mathbb{R} \ : \ |3x^2 - 5x + 1| \ge 1\} = \ ]-\infty, 0] \cup \left[\frac{2}{3}, 1\right] \cup \left[\frac{5}{3}, +\infty\right[$

3.15. $\{x \in \mathbb{R} \ : \ |3x^2 + 5x + 1| < 1\} = \ ]-\frac{5}{3}, -1[\ \cup \ ]-\frac{2}{3}, 0[$

3.16. $\{x \in \mathbb{R} \ : \ |x^2 + 4x - 3| > 2\} = \ ]-\infty, -5[\ \cup \ ]-2 - \sqrt{5}, -2 + \sqrt{5}[\ \cup \ ]1, +\infty[$

3.17. $\{x \in \mathbb{R} \ : \ |3 + 4x - x^2| \le 2\} = \ \left[-1, 2 - \sqrt{5}\right] \cup \left[2 + \sqrt{5}, 5\right]$

3.18. $\{x \in \mathbb{R} \ : \ |2x^2 - 5x| \ge 3\} = \ ]-\infty, -\frac{1}{2}] \cup \left[1, \frac{3}{2}\right] \cup [3, +\infty[$

3.19. $\{x \in \mathbb{R} \ : \ |2x^2 + 5x| < 3\} = \ ]-3, -\frac{3}{2}[\ \cup \ ]-1, \frac{1}{2}[$

3.20. $\{x \in \mathbb{R} \ : \ |1 + 4x - 3x^2| > 1\} = \ \left]-\infty, \frac{2 - \sqrt{10}}{3}\right[\ \cup \ ]0, \frac{4}{3}[\ \cup \ ]\frac{2 + \sqrt{10}}{3}, +\infty[$

3.21. $\{x \in \mathbb{R} \ : \ |3x^2 + 4x + 1| \le 1\} = \ \left[\frac{-2 - \sqrt{10}}{3}, -\frac{4}{3}\right] \cup \left[0, \frac{-2 + \sqrt{10}}{3}\right]$

3.22. $\{x \in \mathbb{R} \ : \ |x^2 + 3x - 2| \ge 2\} = \ ]-\infty, -4] \cup [-3, 0] \cup [1, +\infty[$

3.23. $\{x \in \mathbb{R} \ : \ |2 + 3x - x^2| < 2\} = \ ]-1, 0[\ \cup \ ]3, 4[$

3.24. $\{x \in \mathbb{R} \ : \ |x^2 - 5x + 2| \ge 2\} = \ ]-\infty, 0] \cup [1, 4] \cup [5, +\infty[$

3.25. $\{x \in \mathbb{R} \ : \ |x^2 + 5x + 2| < 2\} = \ ]-5, -4[\ \cup \ ]-1, 0[$

3.26. $\{x \in \mathbb{R} \ : \ |2x^2 - 3x - 1| > 1\} = \ ]-\infty, -\frac{1}{2}[\ \cup \ ]0, \frac{3}{2}[\ \cup \ ]2, +\infty[$

3.27. $\{x \in \mathbb{R} \ : \ |2x^2 + 3x - 1| \le 1\} = \ \left[-2, -\frac{3}{2}\right] \cup \left[0, \frac{1}{2}\right]$

3.28. $\{x \in \mathbb{R} \ : \ |2x^2 + 4x - 3| > 3\} = \ ]-\infty, -3[\ \cup \ ]-2, 0[\ \cup \ ]1, +\infty[$

3.29. $\{x \in \mathbb{R} \ : \ |3 + 4x - 2x^2| \le 3\} = \ [-2, 0] \cup [4, 6]$

3.30. $\{x \in \mathbb{R} \ : \ |x^2 + 3x - 7| \ge 3\} = \ ]-\infty, -5] \cup [-4, 1] \cup [2, +\infty[$

3.31. $\{x \in \mathbb{R} \ : \ |x^2 - 3x - 7| < 3\} = \ ]-2, -1[\ \cup \ ]4, 5[$

3.32. $\{x \in \mathbb{R} \ : \ |4 - x - x^2| \ge 2\} = \ ]-\infty, -3] \cup [-2, 1] \cup [2, +\infty[$

3.33. $\{x \in \mathbb{R} \ : \ |x^2 - x - 4| < 2\} = \ ]-2, -1[\ \cup \ ]2, 3[$

3.34. $\{x \in \mathbb{R} \ : \ |3x^2 + 2x - 3| > 2\} = \ ]-\infty, -\frac{5}{3}[\ \cup \ ]-1, \frac{1}{3}[\ \cup \ ]1, +\infty[$

3.35. $\{x \in \mathbb{R} \ : \ |3 + 2x - 3x^2| \le 2\} = \ \left[-1, -\frac{1}{3}\right] \cup \left[1, \frac{5}{3}\right]$

3.36. $\left\{x \in \mathbb{R} \ : \ |5x^2 + 4x - \frac{1}{2}| > \frac{1}{2}\right\} = \ ]-\infty, -1[\ \cup \ ]-\frac{4}{5}, 0[\ \cup \ ]\frac{1}{5}, +\infty[$

3.37. $\left\{x \in \mathbb{R} \ : \ |5x^2 - 4x - \frac{1}{2}| \le \frac{1}{2}\right\} = \ \left[-\frac{1}{5}, 0\right] \cup \left[\frac{4}{5}, 1\right]$

3.38. $\{x \in \mathbb{R} \ : \ |5x^2 + 4x - 5| \ge 4\} = \ ]-\infty, -\frac{9}{5}] \cup [-1, \frac{1}{5}] \cup [1, +\infty[$

3.39. $\{x \in \mathbb{R} \ : \ |5 + 4x - 5x^2| < 4\} = \ ]-1, -\frac{1}{5}[\ \cup \ ]1, \frac{9}{5}[$

4. Mostre que:

4.1. $\{x \in \mathbb{R} \;:\; |x(x-3)| = |1-3x|\} = \left\{-1, 3-2\sqrt{2}, 1, 3+2\sqrt{2}\right\}$

4.2. $\{x \in \mathbb{R} \;:\; |x(x-3)| > |1-3x|\} = \left]-\infty, -1\right[\cup \left]3-2\sqrt{2}, 1\right[\cup \left]3+2\sqrt{2}, +\infty\right[$

4.3. $\{x \in \mathbb{R} \;:\; |x^2 + x| \le |x + \frac{3}{4}|\} = \left[\frac{-3}{2}, \frac{-\sqrt{3}}{2}\right] \cup \left[\frac{-1}{2}, \frac{\sqrt{3}}{2}\right]$

4.4. $\{x \in \mathbb{R} \;:\; |x - x^2| \le |x - \frac{3}{4}|\} = \left[\frac{-\sqrt{3}}{2}, \frac{1}{2}\right] \cup \left[\frac{\sqrt{3}}{2}, \frac{3}{2}\right]$

4.5. $\{x \in \mathbb{R} \;:\; |3x+4| > |x^2 + 3x|\} = \left]-3-\sqrt{5}, -2\right[\cup \left]-3+\sqrt{5}, 2\right[$

4.6. $\{x \in \mathbb{R} \;:\; |4-3x| > |3x - x^2|\} = \left]-2, 3-\sqrt{5}\right[\cup \left]2, 3+\sqrt{5}\right[$

4.7. $\{x \in \mathbb{R} \;:\; |2x^2 - 5x| \le |5x - 8|\} = [-2, 1] \cup [2, 4]$

4.8. $\{x \in \mathbb{R} \;:\; |2x^2 + 5x| \le |5x + 8|\} = [-4, -2] \cup [-1, 2]$

4.9. $\{x \in \mathbb{R} \;:\; |2x - x^2| < |1 - 2x|\} = \left]-1, 2-\sqrt{3}\right[\cup \left]1, 2+\sqrt{3}\right[$

4.10. $\{x \in \mathbb{R} \;:\; |x^2 + 2x| < |2x + 1|\} = \left]-2-\sqrt{3}, -1\right[\cup \left]-2+\sqrt{3}, 1\right[$

4.11. $\{x \in \mathbb{R} \;:\; |5x + 4| > |4x^2 + 5x|\} = \left]-2, -1\right[\cup \left]-\frac{1}{2}, 1\right[$

4.12. $\{x \in \mathbb{R} \;:\; |5x - 4| > |4x^2 - 5x|\} = \left]-1, \frac{1}{2}\right[\cup \left]1, 2\right[$

4.13. $\{x \in \mathbb{R} \;:\; |3 - 2x| \ge |2x - x^2|\} = \left[-\sqrt{3}, 1\right] \cup \left[\sqrt{3}, 3\right]$

4.14. $\{x \in \mathbb{R} \;:\; |2x + 3| \ge |x^2 + 2x|\} = \left[-3, -\sqrt{3}\right] \cup \left[-1, \sqrt{3}\right]$

4.15. $\{x \in \mathbb{R} \;:\; |x^2 + 3x| \le |3x + 5|\} = \left[-5, -\sqrt{5}\right] \cup \left[-1, \sqrt{5}\right]$

4.16. $\{x \in \mathbb{R} \;:\; |x^2 - 3x| \le |3x - 5|\} = \left[-\sqrt{5}, 1\right] \cup \left[\sqrt{5}, 5\right]$

4.17. $\{x \in \mathbb{R} \;:\; |2x^2 + 3x| < |3x + 4|\} = \left]-2, -\sqrt{2}\right[\cup \left]-1, \sqrt{2}\right[$

4.18. $\{x \in \mathbb{R} \;:\; |2x^2 - 3x| < |3x - 4|\} = \left]-\sqrt{2}, 1\right[\cup \left]\sqrt{2}, 2\right[$

4.19. $\{x \in \mathbb{R} \;:\; |2x^2 + x| > |2x + 1|\} = \left]-\infty, -1\right[\cup \left]1, +\infty\right[$

4.20. $\{x \in \mathbb{R} \;:\; |x - 2x^2| \ge |1 - 2x|\} = \left]-\infty, -1\right] \cup \left\{\frac{1}{2}\right\} \cup [1, +\infty[$

4.21. $\{x \in \mathbb{R} \;:\; |3x^2 + x| \le |3x + 1|\} = [-1, 1]$

4.22. $\{x \in \mathbb{R} \;:\; |x - 3x^2| < |1 - 3x|\} = \left]-1, \frac{1}{3}\right[\cup \left]\frac{1}{3}, 1\right[$

4.23. $\{x \in \mathbb{R} \;:\; |3x^2 + 4x| \ge |3x + 2|\} = \left]-\infty, -2\right] \cup \left[-1, -\frac{1}{3}\right] \cup \left[\frac{2}{3}, +\infty\right[$

4.24. $\{x \in \mathbb{R} \;:\; |4x - 3x^2| > |2 - 3x|\} = \left]-\infty, -\frac{2}{3}\right[\cup \left]\frac{1}{3}, 1\right[\cup \left]2, +\infty\right[$

4.25. $\{x \in \mathbb{R} \;:\; 3|x + 1| \le 2|x^2 + 2x|\} = \left]-\infty, -3\right] \cup \left[-\frac{3}{2}, -\frac{1}{2}\right] \cup [1, +\infty[$

4.26. $\{x \in \mathbb{R} \;:\; 3|1 - x| < 2|2x - x^2|\} = \left]-\infty, -1\right[\cup \left]-\frac{1}{2}, \frac{3}{2}\right[\cup \left]3, +\infty\right[$

4.27. $\{x \in \mathbb{R} \;:\; 8|x^2 + x| \ge 3|2x + 1|\} = \left]-\infty, -\frac{3}{2}\right] \cup \left[-\frac{3}{4}, -\frac{1}{4}\right] \cup \left[\frac{1}{2}, +\infty\right[$

4.28. $\{x \in \mathbb{R} \;:\; 8|x^2 - x| > 3|1 - 2x|\} = \left]-\infty, -\frac{1}{2}\right[\cup \left]\frac{1}{4}, \frac{3}{4}\right[\cup \left]\frac{3}{2}, +\infty\right[$

4.29. $\{x \in \mathbb{R} \;:\; 3|x + 6| \le |x^2 + 4x|\} = \left]-\infty, \frac{-1-\sqrt{73}}{2}\right] \cup \left[\frac{-1+\sqrt{73}}{2}, +\infty\right[$

4.30. $\{x \in \mathbb{R} \;:\; 3|6 - x| < |4x - x^2|\} = \left]-\infty, \frac{1-\sqrt{73}}{2}\right[\cup \left]\frac{1+\sqrt{73}}{2}, +\infty\right[$