

p. 296 Devoir sur les équations valeur absolue

17. $|1 - 2(x-1)| = 2$
 $|1 - 2x + 2| = 2$

+ - →

$-2x + 2 = 2$ $2x - 2 = 2$
 $-2x = 0$ $2x = 4$
 $x = 0 \checkmark$ $x = 4 \checkmark$

$\{0, 4\}$

19. $|\frac{x}{3} - \frac{1}{2}| = 1$ $\frac{x}{3} - \frac{1}{2} = 0$

- 3/2 + → $x = 3/2$

$(-\frac{x}{3} + \frac{1}{2} = 1) \times 6$ $(\frac{x}{3} - \frac{1}{2} = 1) \times 6$
 $-2x + 3 = 6$ $2x - 3 = 6$
 $-2x = 3$ $2x = 9$
 $x = -3/2 \checkmark$ $x = 9/2 \checkmark$

$\{-3/2, 9/2\}$

27. $|3x - 2| = x - 4$

- + →

$-3x + 2 = x - 4$ $3x - 2 = x - 4$
 $-4x = -6$ $2x = -2$
 $x = 3/2$ $x = -1$

\emptyset

29. $|3(x-6)| = x$
 $|3x - 18| = x$

- 6 + →

$-3x + 18 = x$ $3x - 18 = x$
 $18 = 4x$ $2x = 18$
 $\frac{18}{4} = \frac{4x}{4}$ $x = 9 \checkmark$
 $x = 9/2 \checkmark$

$\{9/2, 9\}$

31. $|\frac{x}{3} - 1| = 6 - 2x$ $\frac{x}{3} - 1 = 0$
 $\frac{x}{3} = 1$
 $x = 3$

- 3 + →

$(-\frac{x}{3} + 1 = 6 - 2x) \times 3$ $(\frac{x}{3} - 1 = 6 - 2x) \times 3$
 $-x + 3 = 18 - 6x$ $x - 3 = 18 - 6x$
 $5x = 15$ $7x = 21$
 $x = 3 \checkmark$ $x = 3 \checkmark$

$\{3\}$

33. $|2x| = |x + 4|$

- -4 - + 0 + + →

$-2x = -x - 4$ $-2x = x + 4$ $2x = x + 4$
 $4 = x$ $-4 = 3x$ $x = 4 \checkmark$
 $x = -4/3 \checkmark$

$\{-4/3, 4\}$

$$37. |3d-7| = |4-d|$$

$- + \frac{7}{3} + + 4 + -$
 $-3d+7=4-d \quad 3d-7=4-d \quad 3d-7=-4+d$
 $-2d=-3 \quad 4d=11 \quad 2d=3$
 $d=3/2 \checkmark \quad d=11/4 \checkmark \quad d=3/2 \checkmark$
 $\{3/2, 11/4\}$

$$39. |2(x+1)| = -|2(x-1)|$$

$- - -1 + - -1 + +$
 $-2x+2 = -(-2x+2) \quad 2x+2 = -(-2x+2)$
 $-2x+2 = 2x-2 \quad 2x+2 = 2x-2$
 $0 = 4x \quad z = -2$
 $x = 0x \quad \emptyset$
 $2x+2 = -(2x-2)$
 $2x+2 = -2x+2$
 $4x = 0$
 $x = 0x$

\emptyset

$$41. |x+1| + |x-1| = 4$$

$- - -1 + -1 + +$
 $-x-1-x+1=4 \quad x+1-x+1=4 \quad x+1+x-1=4$
 $-2x=4 \quad z=4x \quad 2x=4$
 $x=-2 \checkmark \quad x=2 \checkmark$
 $\{-2, 2\}$

$$43. |c+2| + |c-3| = -2$$

Aucune solution \Rightarrow la somme de 2 valeurs absolues ne peut pas être négative.

$$45. |m+6| - 2 = |m+4|$$

$- - -6 + - -4 + +$
 $-m-6-2 = -m-4 \quad m+6-2 = m+4$
 $-8 = -4x \quad 2m = -8$
 $m = -4$
 $\{m \in \mathbb{R} \mid m = -4\}$

$$47. |x+5| = 2 - |3x+2|$$

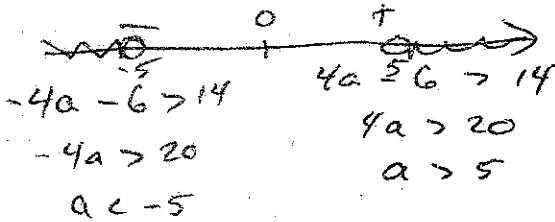
$- - -5 + - -3/2 + +$
 $-x-5 = 2 - (-3x-2) \quad x+5 = 2 - (-3x-2)$
 $-x-5 = 2+3x+2 \quad x+5 = 2+3x+2$
 $-9 = 4x \quad 1 = 2x$
 $x = -9/4 \quad x = 1/2 \checkmark$
 $x+5 = 2 - (3x+2)$
 $x+5 = 2 - 3x - 2$
 $4x = -5$
 $x = -5/4 \checkmark$

\emptyset

Devoir : Inéquations valeur absolue

p. 296

55. $|4a| - 6 > 14$



$] -\infty, -5[\cup] 5, \infty [$

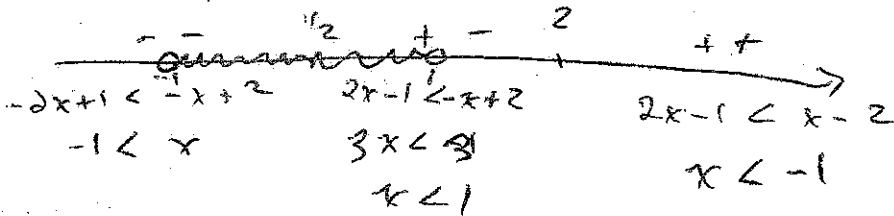
57. $|x+5| + 3 > 0$

$|x+5| > -3$

⌈ toujours ≥ 0 , donc toujours ≥ -3

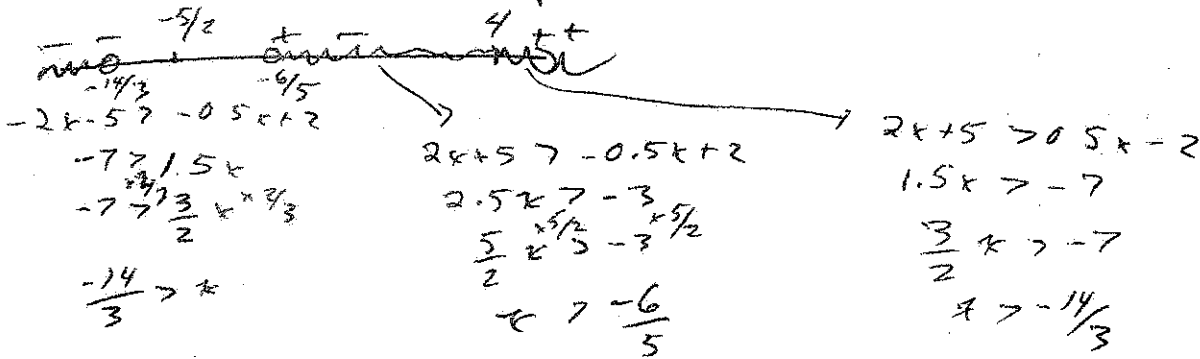
\mathbb{R} .

69. $|2x-1| < |x-2|$



$] -1, 1[$

72. $|2x+5| > |0.5x-2|$



$] -\infty, -\frac{14}{3}[\cup] -\frac{6}{5}, \infty [$

$$79. |2x-5| + |3x-1| \geq 1$$

$$\begin{array}{l}
 -2x+5 + -3x+1 \geq 1 \quad -2x+5 + 3x-1 \geq 1 \quad 2x-5 + 3x-1 \geq 1 \\
 -5x \geq -5 \quad x+4 \geq 1 \quad 5x \geq 7 \\
 x \leq 1 \quad x \geq -3 \quad x \geq 7/5
 \end{array}$$

\mathbb{R} .

$$80. |4y+2| - |2y-5| \leq -1$$

$$\begin{array}{l}
 -4y-2 - (-2y+5) \leq -1 \quad 4y+2 - (-2y+5) \leq -1 \quad 4y+2 - (2y-5) \leq -1 \\
 -4y-2+2y-5 \leq -1 \quad 4y+2+2y-5 \leq -1 \quad 2y+7 \leq -1 \\
 -6 \leq 2y \quad 6y \leq 2 \quad 2y \leq -8 \\
 -3 \leq y \quad y \leq 2/6 \quad y \leq -4 \\
 \quad \quad \quad y \leq 1/3
 \end{array}$$

$[-3, 1/3]$.

$$73. |x+1| + |x-1| \leq 6$$

$$\begin{array}{l}
 -x-1 + -x+1 \leq 6 \quad x+1 - x+1 \leq 6 \quad x+1 + x-1 \leq 6 \\
 -2x \leq 6 \quad 2 \leq 6 \quad 2x \leq 6 \\
 x \geq -3 \quad \underline{\text{oui}} \quad x \leq 3
 \end{array}$$

$[-3, 3]$

$$77. |w+4| + |4-w| > 7$$

$$\begin{array}{l}
 -w-4 + 4-w > 7 \quad w+4 + 4-w > 7 \quad w+4 - 4+w > 7 \\
 -2w > 7 \quad 8 > 7 \quad 2w > 7 \\
 w < -7/2 \quad \underline{\text{oui}} \quad w > 7/2
 \end{array}$$

\mathbb{R} .