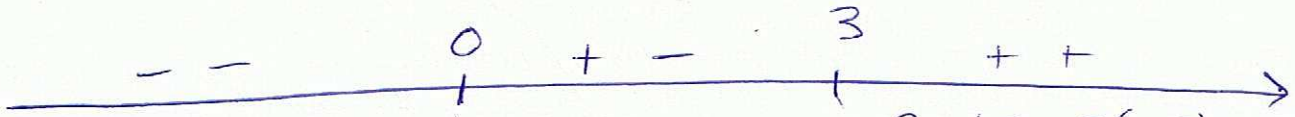
3.8 Corrigé

1. a) $y = |2x| + 1$ $\quad y = -3|x-3| + 7$



$-2x+1 = -3(-x+3) + 7$

$-2x+1 = 3x - 9 + 7$

$3 = 5x$

~~$x = 3/5$~~

$2x+1 = -3(-x+3) + 7$

$2x+1 = 3x - 9 + 7$

$3 = x$ ✓

$2x+1 = -3(x-3) + 7$

$2x+1 = -3x + 9 + 7$

$5x = 15$

$x = 3$ ✓

$\{3\} \longrightarrow y = |2(3)| + 1$

$y = 7$

$(3, 7)$

b) $y = -|3x| + 1$ $\quad y = -2|3x| + 10$

$-(-3x) + 1 = -2(-3x) + 10$

$3x + 1 = 6x + 10$

$-9 = 3x$

$-3 = x$ ✓

$y = -|3(-3)| + 1$

$y = -9 + 1$

$y = -8$

$(-3, -8)$

$-3x + 1 = -2(3x) + 10$

$-3x + 1 = -6x + 10$

$3x = 9$

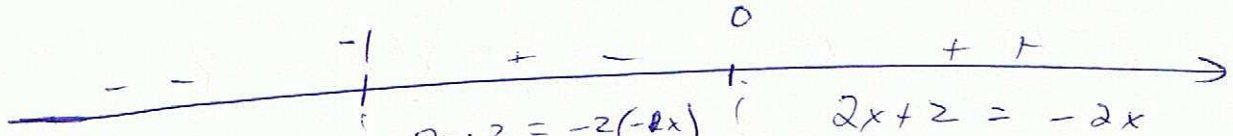
$x = 3$

$y = -|3(3)| + 1$

$y = -8$

$(3, -8)$

c) $y = |2x+2|$ $\quad y = -2|x|$



$-2x-2 = -2(-x)$

$-2x-2 = 2x$

$-2 = 4x$

$x = -\frac{1}{2}$ ✓

$2x+2 = -2(-2x)$

$2x+2 = 2x$

$2 = 0$

$\emptyset$

$2x+2 = -2x$

$4x = -2$

$x = -\frac{1}{2}$

Aucune solution.

2. $y = x-3$ $\quad y = -2|x-h|+8$

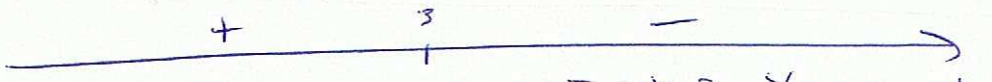
$x-3 = -2|x-h|+8$, $x=3$

$3-3 = -2|3-h|+8$

$0 = -2|3-h|+8$

$2|3-h| = 8$

$|3-h| = 4$



$3-h = 8$

$-h = 5$

$h = -5$

$-3+h = 4$

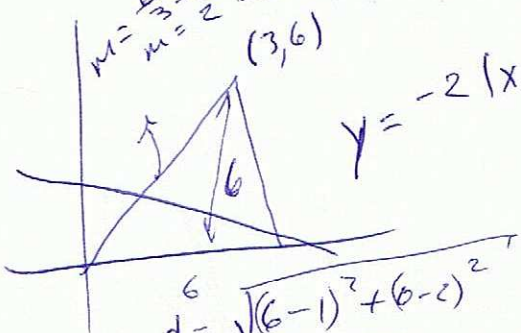
$h = 7$

3. $2x+5y-12=0$ → en remplaçant y → $2x+5(-2|x-3|+6)-12=0$

$2x-10|x-3|+30-12=0$

$2x+18 = 10|x-3|$

$y = -2|x-3|+6$



$m = \frac{6}{3} = 2 \rightarrow a = -2$

$d = \sqrt{(6-1)^2+(6-2)^2}$

$= \sqrt{25+4}$

$= \sqrt{29}$

3

− | +

$2x+18 = 10(-x+3)$

$2x+18 = -10x+30$

$12x = 12$

$x = 1$

$y = -2|1-3|+6$

$y = 2$

$2x+18 = 10(x-3)$

$2x+18 = 10x-30$

$48 = 8x$

$6 = x$

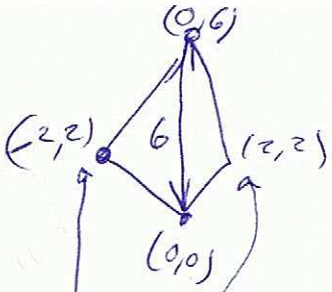
$y = -2|6-3|+6$

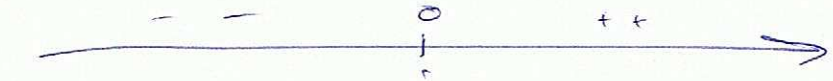
$y = 0$

4 .

$y = |x|$

$y = -2|x| + 6$ $\longrightarrow$ $|x| = -2|x| + 6$





$-x = -2(-x) + 6$ | $x = -2x + 6$

$-6 = 3x$ | $3x = 6$

$-2 = x$ | $x = 2$

$y = |-2|$ | $y = |2|$

$y = 2$ | $y = 2$

$(-2, 2)$ | $(2, 2)$

$A = \frac{bh}{2} + \frac{bh}{2}$

$= \frac{6 \times 2}{2} + \frac{6 \times 2}{2}$

$= 6 + 6$

$= 12\ dm^2$

$(0,0)$ et $(2,2)$

$d = \sqrt{(2-0)^2 + (2-0)^2}$

$d = \sqrt{4}$

$d = 2\sqrt{2}$

$(0,6)$ et $(2,2)$

$d = \sqrt{(0-2)^2 + (6-2)^2}$

$= \sqrt{4+16}$

$= \sqrt{20}$

$d = 2\sqrt{5}$

$P = 2(2\sqrt{2}) + 2(2\sqrt{5})$

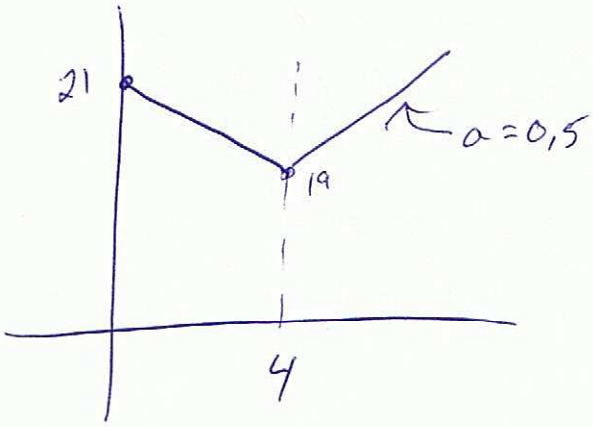
$P = 4\sqrt{2} + 4\sqrt{5}$

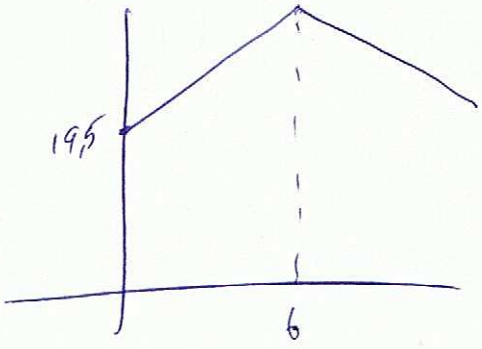
$P \simeq 7,30\ dm$.

$x=0 \Rightarrow$ on est le matin

5. M. Gécho

Mme Yafrète * Domaine : $[0, 9]$





$\frac{1°C}{4h} = 0,25°C/h$

$a = -0,25$

$K = 20 + 4 \times (-0,5)$

$K = 19$

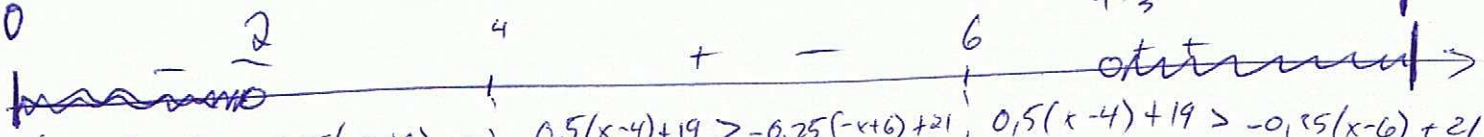
$T = 0,5|x-4| + 19$

$K = 19,5 + 6 \times 0,25$

$K = 21$

$T = -0,25|x-6| + 21$

$0,5|x-4| + 19 > -0,25|x-6| + 21$



$0,5(-x+4) + 19 > -0,25(-x+6) + 21$

$-0,5x + 2 + 19 > 0,25x - 1,5 + 21$

$-0,5x + 21 > 0,25x + 19,5$

$1,5 > 0,75x$

$2 > x$

$0,5(x-4) + 19 > -0,25(-x+6) + 21$

$0,5x - 2 + 19 > 0,25x - 1,5 + 21$

$0,5x + 17 > 0,25x + 19,5$

$0,25x > 2,5$

$x > 10$

$0,5(x-4) + 19 > -0,25(x-6) + 21$

$0,5x - 2 + 19 > -0,25x + 1,5 + 21$

$0,5x + 17 > -0,25x + 22,5$

$0,75x > 5,5$

$x > 7\frac{1}{3}$

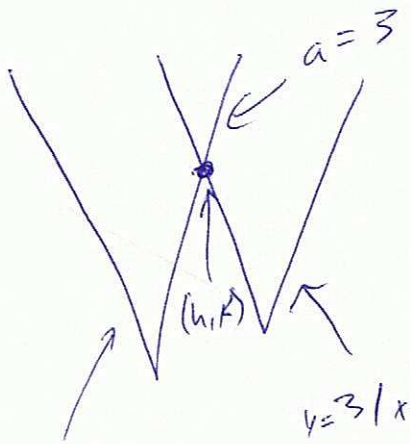
où 2h $\Rightarrow$ 2h

$7\frac{1}{3}$ à 9h $\Rightarrow$ $1\frac{2}{3}$ h

$3\frac{2}{3}$ h

donc 3h 40 min.

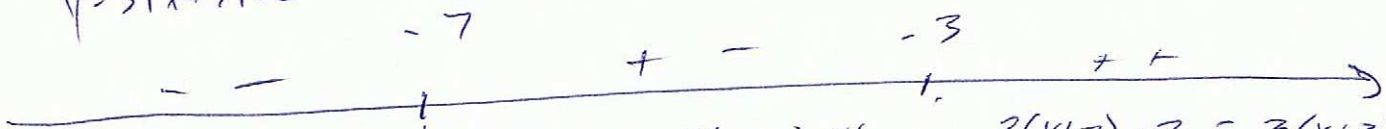
6.



$y = 3|x+3| + 4$

$y = 3|x+7| - 2$

$3|x+7| - 2 = 3|x+3| + 4$



$3(-x-7) - 2 = 3(-x-3) + 4$

$-3x - 21 - 2 = -3x - 9 + 4$

$-23 = -5$

$\emptyset$

$3(x+7) - 2 = 3(-x-3) + 4$

$3x + 21 - 2 = -3x - 9 + 4$

$6x = -5 - 19$

$6x = -24$

$x = -4$ ✓

$3(x+7) - 2 = 3(x+3) + 4$

$3x + 21 - 2 = 3x + 9 + 4$

$19 = 13$

$\emptyset$

$y = 3|-4+7| - 2$

$y = 3(3) - 2$

$y = 7$

$h = -4, \; k = 7 \Rightarrow y = 3|x+4| + 7$

7.

Absolue

$(h,k) = (3,-4)$

$a = ?$ $\quad pt \to (5,2)$

$m = \frac{2-(-4)}{5-3}$

$= \frac{6}{2}$

$= 3$

$a = 3$

$y = 3|x-3| - 4$

Quadratique

$(h,k) = (3,-2)$

$pt \quad (5,2) \to a = ?$

$y = a(x-3)^2 - 2$

$2 = a(5-2)^2 - 2$

$4 = 9a$

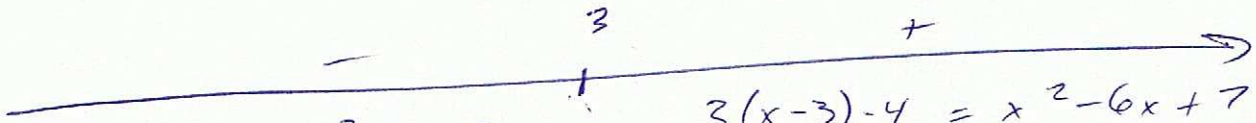
$a = 1$

$y = (x-3)^2 - 2$

$y = x^2 - 6x + 9 - 2$

$y = x^2 - 6x + 7$

$3|x-3| - 4 = x^2 - 6x + 7$



$3(-x+3) - 4 = x^2 - 6x + 7$

$-3x + 9 - 4 = x^2 - 6x + 7$

$0 = x^2 - 3x + 2$

$0 = x^2 - 2x - x + 2$

$0 = x(x-2) - 1(x-2)$

$0 = (x-2)(x-1)$

$x = 2$ $\quad x = 1$

$y = 3|2-3| - 4$ $\quad y = 3|1-3| - 4$

$y = -1$ $\quad y = 2$

$(2,-1)$ $\quad (1,2)$

$3(x-3) - 4 = x^2 - 6x + 7$

$3x - 9 - 4 = x^2 - 6x + 7$

$3x - 13 = x^2 - 6x + 7$

$0 = x^2 - 9x + 20$

$0 = x^2 - 4x - 5x + 20$

$0 = x(x-4) - 5(x-4)$

$0 = (x-4)(x-5)$

$x = 4$ $\quad x = 5$

$y = 3|4-3| - 4$ $\quad y = 3|5-3| - 4$

$y = -1$ $\quad y = 2$

$(4,-1)$ $\quad (5,2)$

8. $y = 3|x+7|-6$ $\quad 3|x+7|-6 = -|3x+30|+3$

$y = -|3x+30|+3$

$3(-x-7)-6 = -(-3x-30)+3$

$-3x-21-6 = 3x+30+3$

$-27-3x = 6x$

$-90 = 6x$

$-10 = x$ ✓

$3(-x-7)-6 = -(3x+30)+3$

$-3x-21-6 = -3x-30+3$

$-3x-27 = -3x-27$

infinité de solutions

$3(x+7)-6 = -(3x+30)+3$

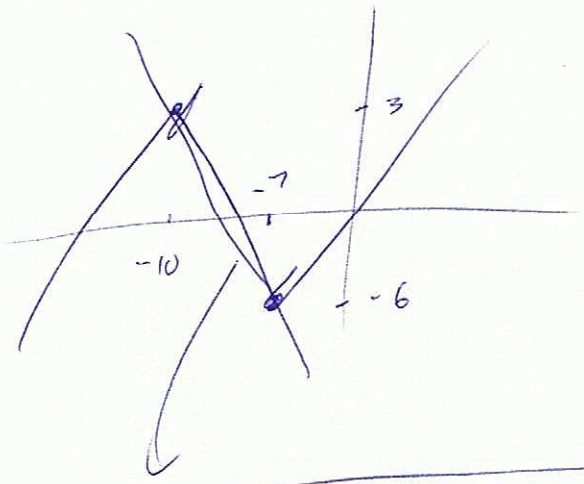
$3x+21-6 = -3x-30+3$

$3x+15 = -3x-27$

$6x = -42$

$x = -7$

Graphique :



$d = \sqrt{(-10--7)^2 + (3--6)^2}$

$= \sqrt{9+81}$

$= \sqrt{90}$

$= 3\sqrt{10}$