Exercice 1

1. $\begin{cases} y = \dfrac{x^2-3x+2}{x-4} \\ y = 0 \end{cases} \Rightarrow \dfrac{x^2-3x+2}{x-4} = 0$

$x-4=0$
$x=4$ V.I.

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

$\Delta = (-3)^2 - 4\times 2\times 1 = 1$

$x_1 = \dfrac{3+1}{2} = 2 \qquad x_2 = \dfrac{3-1}{2} = 1$

$\Rightarrow \begin{cases} x_1 = 2 \\ y = 0 \end{cases} \qquad \begin{cases} x_2 = 1 \\ y = 0 \end{cases}$

2. $\begin{cases} y = \dfrac{x^2-3x+2}{x-4} \\ x = 0 \end{cases} \Rightarrow \begin{cases} y = -\dfrac{1}{2} \\ x = 0 \end{cases}$

3. $\begin{cases} y = \dfrac{x^2-3x+2}{x-4} \\ y = x-1 \end{cases} \Rightarrow \dfrac{x^2-3x+2}{x-4} = x-1$

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

$$\frac{(x^2-3x+2)\times 1 - (x-1)\times(x-4)}{(x-4)\times 1} = 0$$

$$\frac{x^2-3x+2-(x^2-4x-x+4)}{x-4} = 0$$

$$\frac{x^2-3x+2-x^2+4x+x-4}{x-4} = 0$$

$$\frac{2x-2}{x-4} = 0$$

$x-4=0$
$x=4$ V.I.

$2x-2=0$
$2x=2$
$x=1$

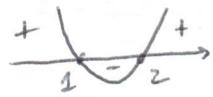
$\Rightarrow \begin{cases} x=1 \\ y=0 \end{cases}$

4. $f(x) = \dfrac{x^2-3x+2}{x-4}$

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

$\Delta = 1$

$x_1 = 2 \quad x_2 = 1$



$x-4>0$

$x>4$ V.I.

x	$-\infty$		1		2		4		$+\infty$
x^2-3x+2	+	0	−	0	+		+		
$x-4$	−		−		−	0	+		
$f(x)$	−	0	+	0	−	‖	+		

Exercice 2

1. $f(x) = \dfrac{x^2-4x-5}{1-x}$

$x^2-4x-5>0$

$\Delta = (-4)^2 - 4\times 1\times(-5) =$

$= 16+20 = 36$

$x_1 = \dfrac{4+6}{2} = 5 \quad x_2 = \dfrac{4-6}{2} = -1$

$1-x>0$

$-x>-1$

$x<1$ V.I.

x	$-\infty$		-1		1		5		$+\infty$
x^2-4x-5	+	0	−		−	0	+		
$1-x$	+		+		−		−		
$f(x)$	+	0	−	‖	+	0	−		

2. $f(0) = \frac{-5}{+1} = -5$; $f(-2) = \frac{(-2)^2 - 4\times(-2) - 5}{1-(-2)} = \frac{7}{3}$

3. $\frac{x^2-4x-5}{1-x} = 1$

$\frac{x^2-4x-5}{1-x} - 1 = 0$

$\frac{x^2-4x-5-(1-x)}{1-x} = 0$

$\frac{x^2-4x-5-1+x}{1-x} = 0$

$\frac{x^2-3x-6}{1-x} = 0$

$1-x = 0$
$x = 1$ v.I.

$x^2-3x-6 = 0$

$\Delta = 9 - 4\times(-6) = 33$

$x_1 = \frac{3+\sqrt{33}}{2}$ $\quad x_2 = \frac{3-\sqrt{33}}{2}$

4. $\begin{cases} y = \frac{x^2-4x-5}{1-x} \\ y = -\frac{2}{3}x \end{cases} \Rightarrow \frac{x^2-4x-5}{1-x} = -\frac{2}{3}x$

$\frac{x^2-4x-5}{1-x} + \frac{2x}{3} = 0$

$\frac{(x^2-4x-5)\times 3 + 2x\times(1-x)}{(1-x)\times 3} = 0$

$\frac{3x^2-12x-15+2x-2x^2}{3-3x} = 0$

$\frac{x^2-10x-15}{3-3x} = 0$

$3-3x = 0$
$x = 1$ v.I.

$x^2-10x-15 = 0$

$\Delta = 100 + 60 = 160$

$\begin{cases} x_1 = \frac{10+\sqrt{160}}{2} \\ y = -\frac{2}{3}\times\frac{10+\sqrt{160}}{2} \end{cases}$ $\quad \begin{cases} x_2 = \frac{10-\sqrt{160}}{2} \\ y = -\frac{2}{3}\times\frac{10-\sqrt{160}}{2} \end{cases}$

Exercice 3

1. $f(-2) = 3$; $f(1) = 0$; $f(3) = -1$ (Voir le graphique)

2. T_1 : $y = ax + b$

$a = \frac{-2}{2} = -1$ $\quad b = 1$ (Voir le graphique)

$\Rightarrow$ T_1 : $y = -x + 1$

T_0 : $y = -1$ (Droite horizontale)

3. $A(-2;3)$ et $D(-1;5)$

$x_A \; y_A$ $\qquad$ $x_D \; y_D$

T : $y = ax + b$

$a = \frac{y_D - y_A}{x_D - x_A} = \frac{5-3}{-1-(-2)} = \frac{2}{1} = 2$

$\Rightarrow$ T : $y = 2x + b$

Utilisez le point A dans l'équation de T :

$y_A = 2x_A + b$

$3 = 2 \times (-2) + b$

$3 = -4 + b \Rightarrow b = 7$

$\Rightarrow$ T : $y = 2x + 7$

Graphique