I-
Let $f$ be the function defined by $f(x) = \frac{3x - 9}{x - 2}$.

1) Determine the domain of definition of $f$.

2) Determine the two numbers $u$ and $v$ such that $f(x) = u + \frac{v}{x - 2}$. Deduce the limits of $f$ at $-\infty$ and $+\infty$.

3) Construct the table of variations of $f$.

4) Construct the representative curve of the function $f$ in an orthonormal system of axes.

5) Calculate the area bounded by the curve of $f$, the two straight lines $x = -1$ and $x = 1$ and the x-axis.

II-
Consider the function $f$ defined by $f(x) = \frac{3x^2 + 11x + 4}{(x + 3)(x + 2)(x + 4)}$.

1) Find $A$, $B$ and $C$ such that $\frac{3x^2 + 11x + 4}{(x + 3)(x + 2)(x + 4)} = \frac{A}{x + 3} + \frac{B}{x + 2} + \frac{C}{x + 4}$.

2) Calculate $\int_0^1 f(x) \, dx$.

III-
Consider the points $A=(1,-1,-1)$, $B=(2,-1,1)$ and $C=(3,-2,0)$.

1) Show that $A$, $B$ and $C$ determine a plane (P).

2) Write an equation of the plane (P).