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Recap solution by characteristics of $u_t + c_0 * u_x = 0$ [linearized traffic flow] and $u_t + c_0 * u_x = a * u$.

Examples: Linear problems with constant or simple variable coefficients, where all the calculations can be done exactly. In each example:

- Write characteristics in parametric form.
- Solve and draw the characteristics.
- Eliminate the characteristic variables and find the solution.
- Show where the solution is defined.

Example 1: $u_t+c_0*u_x = a*u$. IVP problem on $-\infty < x < \infty$, t > 0.

Example 2: $x^*u_x + y^*u_y = y$, u(x, 1) = g(x) for $-\infty < x < \infty$, y > 0.

Example 3: $u_x + x^{2*}u_y = y$, with u(x, 0) = g(x) for x > 0.

Show that this defines the solution to the right of $y = x^3/3$.

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