

a) Note about solving ode's!

How do you solve $dx/ds = x-y$ and $dy/ds = x+y$,

$x(0) = z$ and $y(0) = 0$... ?

CANNOT DO SEPARATION OF VARIABLES!

b) Example 3: $A_t + (0.5*A^2)_x = 0$, with $a > 0$ a constant, and

$A = a$ for $x < 0$, $a > 1$, $t \rightarrow \infty$, get shock.

$A = x$ for $0 < x < 1$, $a < 1$, $t \rightarrow \infty$, get rarefaction.

$A = 1$ for $1 < x$

Note that there is always a shock starting at $x=t=0$. But for $a < 1$ this shock never reaches the $A = 1$ region, and becomes smaller and smaller as t grows.

Draw solution $[A$ as a function of $x]$ for typical values of t .

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