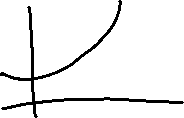
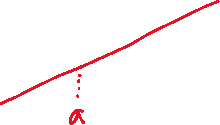
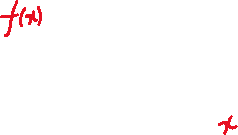
* 1. Nonlinear Kalman filter
* Linear Approximation:

1. scalar case



Example\_1:

At

Hence for linearization at ,

Example\_2:

* For linearization at ,

1. Multivariable case

where

Example\_3:

At

Hence the linearization at

* Extended Kalman Filter – see the table KalmaEXF

Linearized model:

where

* Matlab program: see Extended Kalman Filter
* EKF:
* Applicable to Nonlinear system.
* But you may see the examples, it my not be good for stability, uncertainty on the initial conditions and so on.
* See text book example 4.9

%%% Final Example.

* 1) total expectation : proof (in the finite partitions) as <https://en.wikipedia.org/wiki/Law_of_total_expectation>
* 2) Chapter 4. Problems
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1. Chapter 2. Problems

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1. Chapter 3. Problems

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