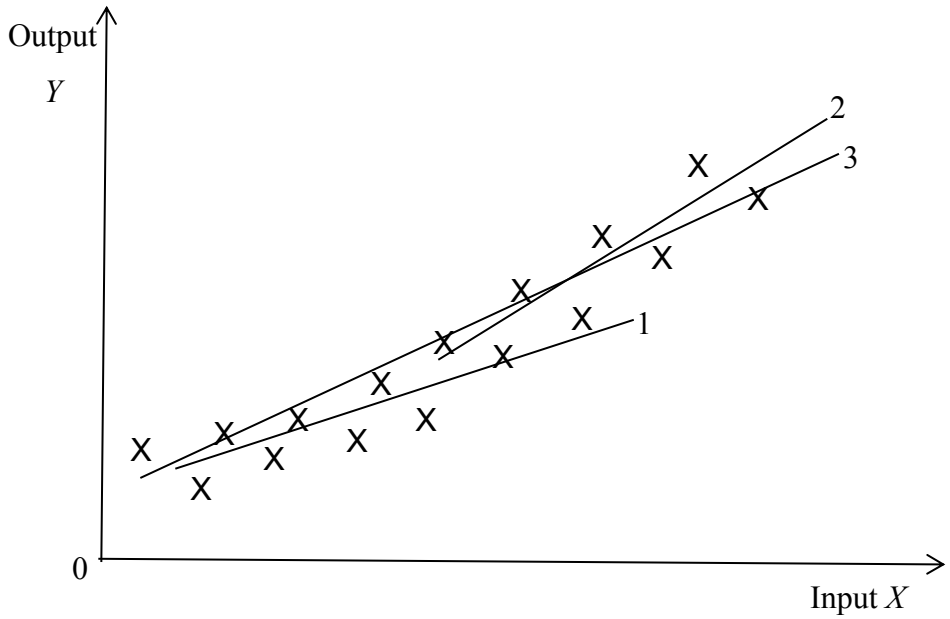
Slide 45:

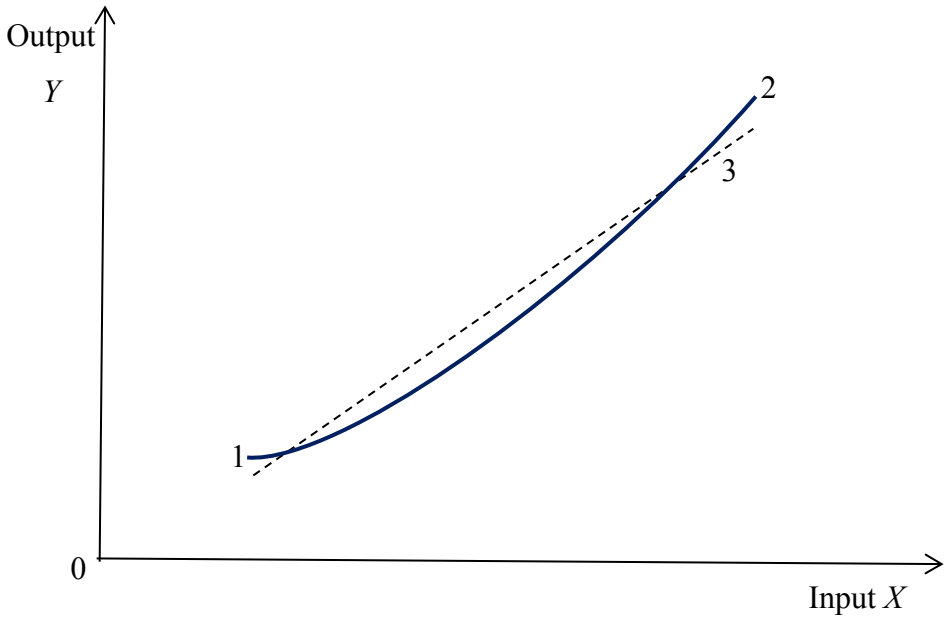


Consider the input (*X*) output (*Y*) data shown in the above figure.

Notes:

- The straight lines represent device sensitivity in the specific region (1, 2, or 3).
- It is a linear representation.
- The standard deviation (std) of each linear fit (linear regression) will represent the error (strictly non-precision) of the fit (or of the data), or the "sensitivity error." *Note*: This error is not just nonlinearity (a type of "model error") but also may include other model errors (e.g., process disturbances, production error) and "measurement error" (e.g., sensor error, noise in the measurement, poor measurement setup)
- The std of region 3 (entire dynamic range) is greater than the std of 1 (for sub-region 1) or the std of 2 (for sub-region 2)

Another Example:



Notes:

Curve 1-2: Actual static transfer characteristic

Line 3: Least squares fit (linear regression) → Linear static transfer characteristic

Point 1: Point of minimum sensitivity

Point 2: Point of maximum sensitivity