

Examples for linear regression

- Do more brightly coloured birds have more parasites?
- How should we estimate merchantable volume of wood from the height of a living tree?
- How is pest infestation late in the season affected by the concentration of insecticide applied early in the season?

Similarities to analysis of variance

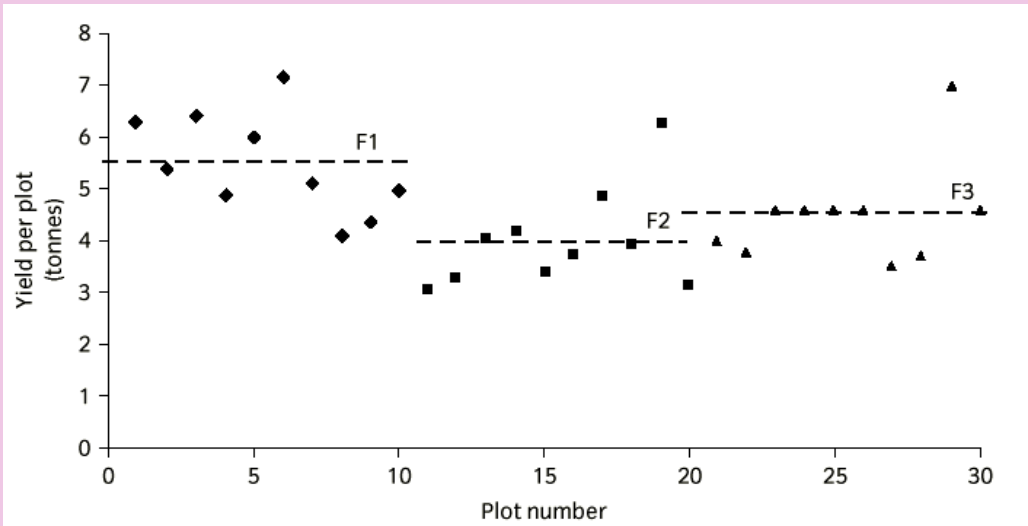
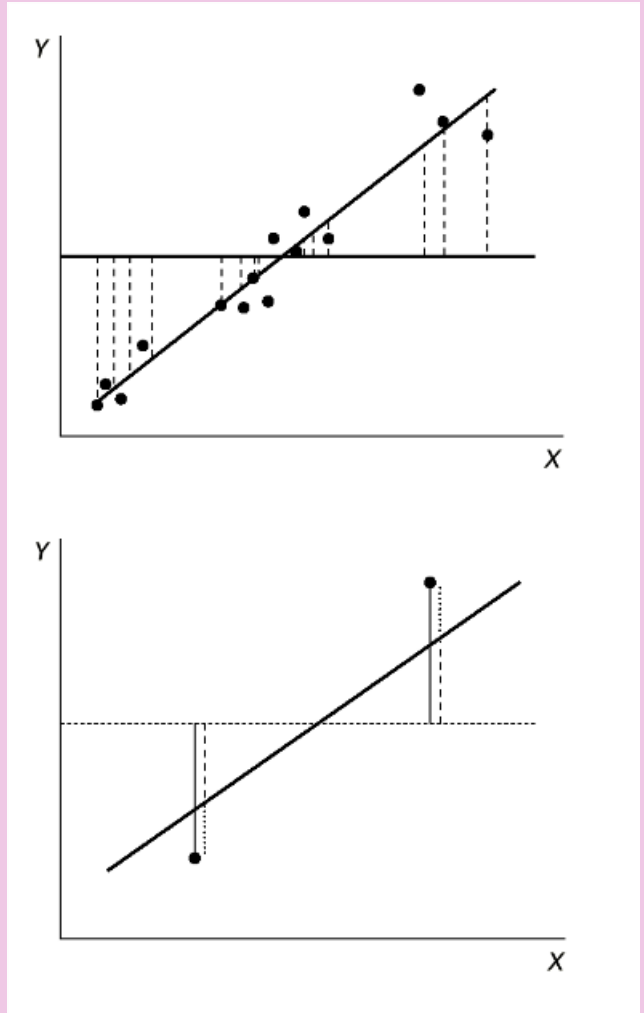


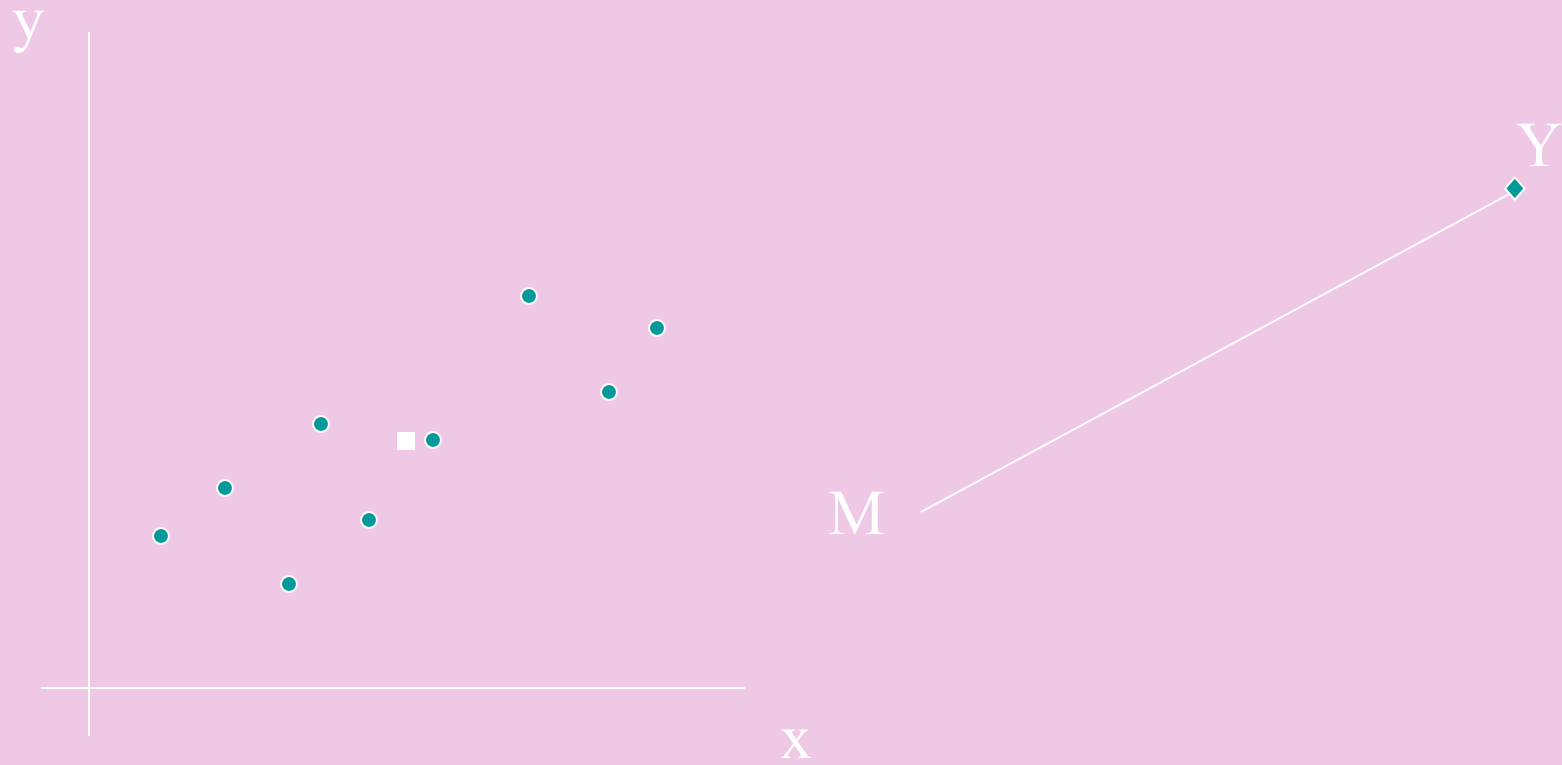
Fig. 1.6 Variability in yield around three means for the *fertiliser* dataset.





Regression

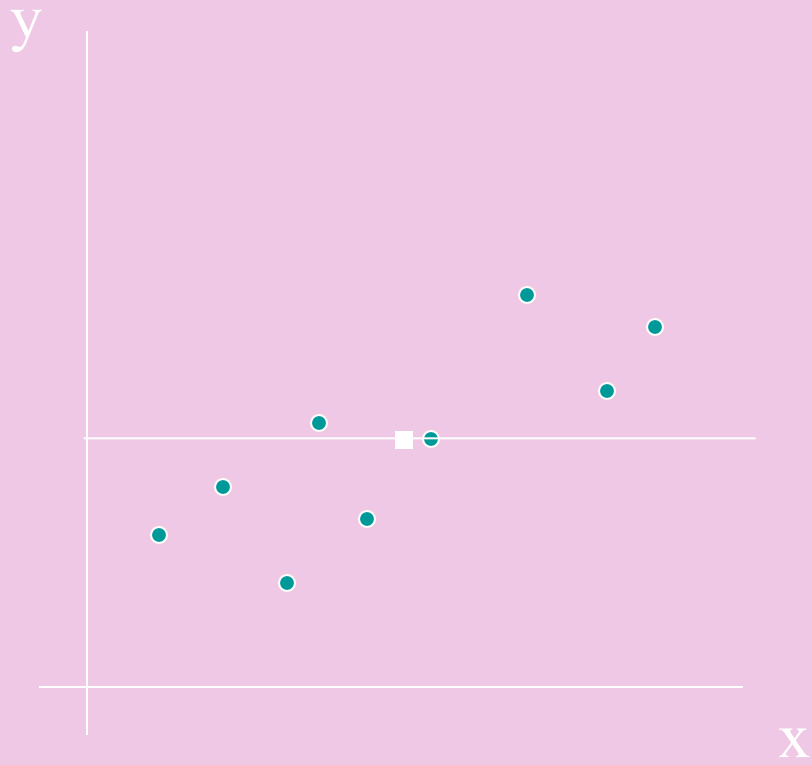
Geometry





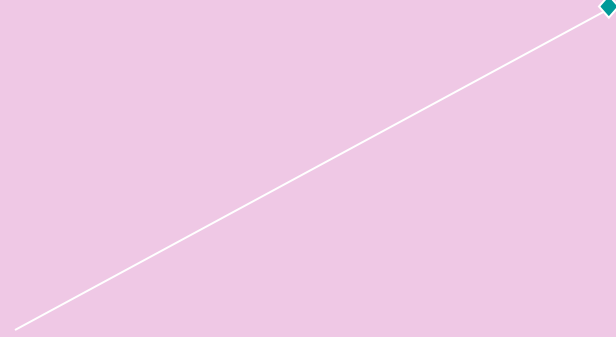
Regression

Geometry



M

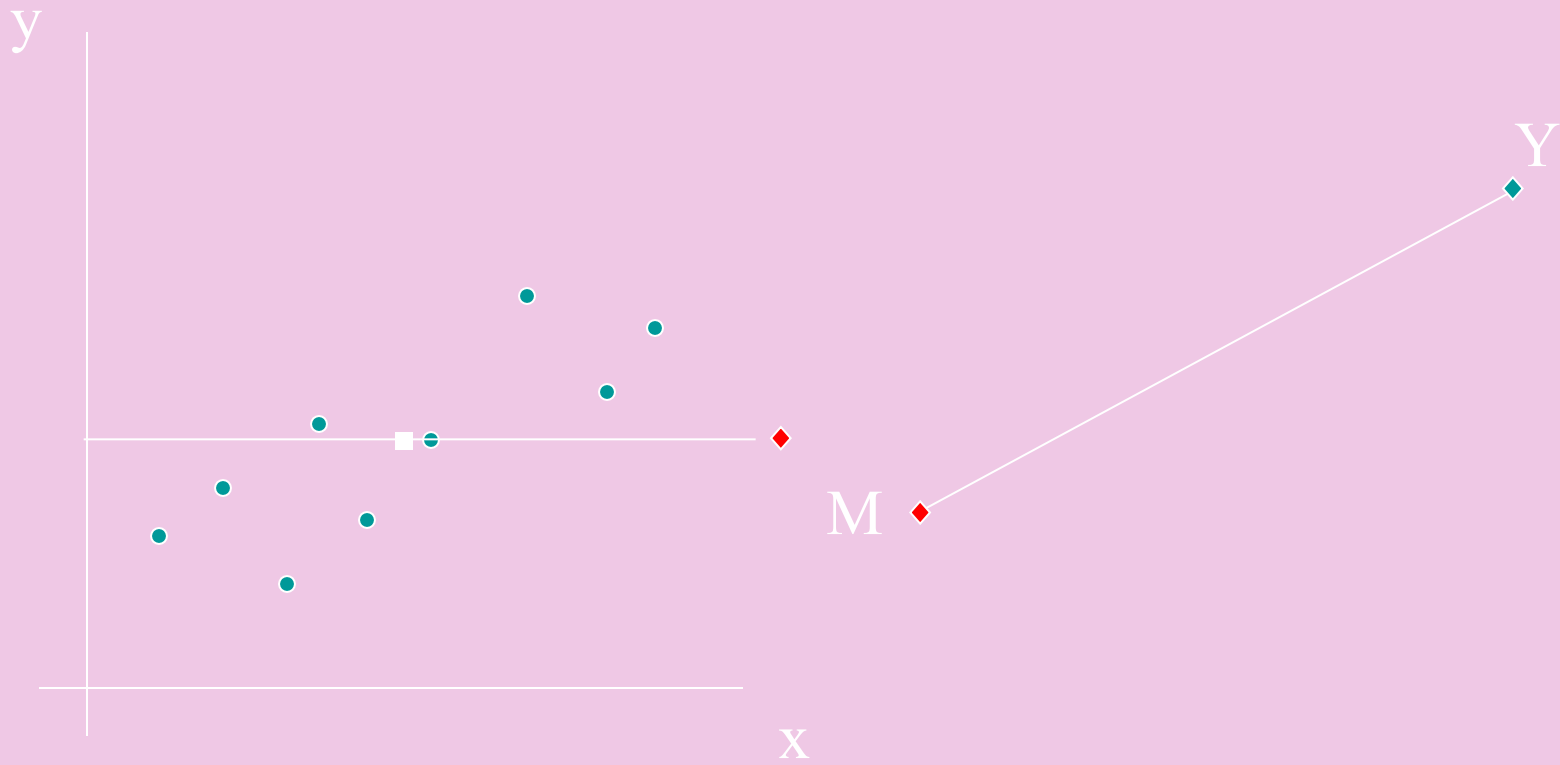
Y





Regression

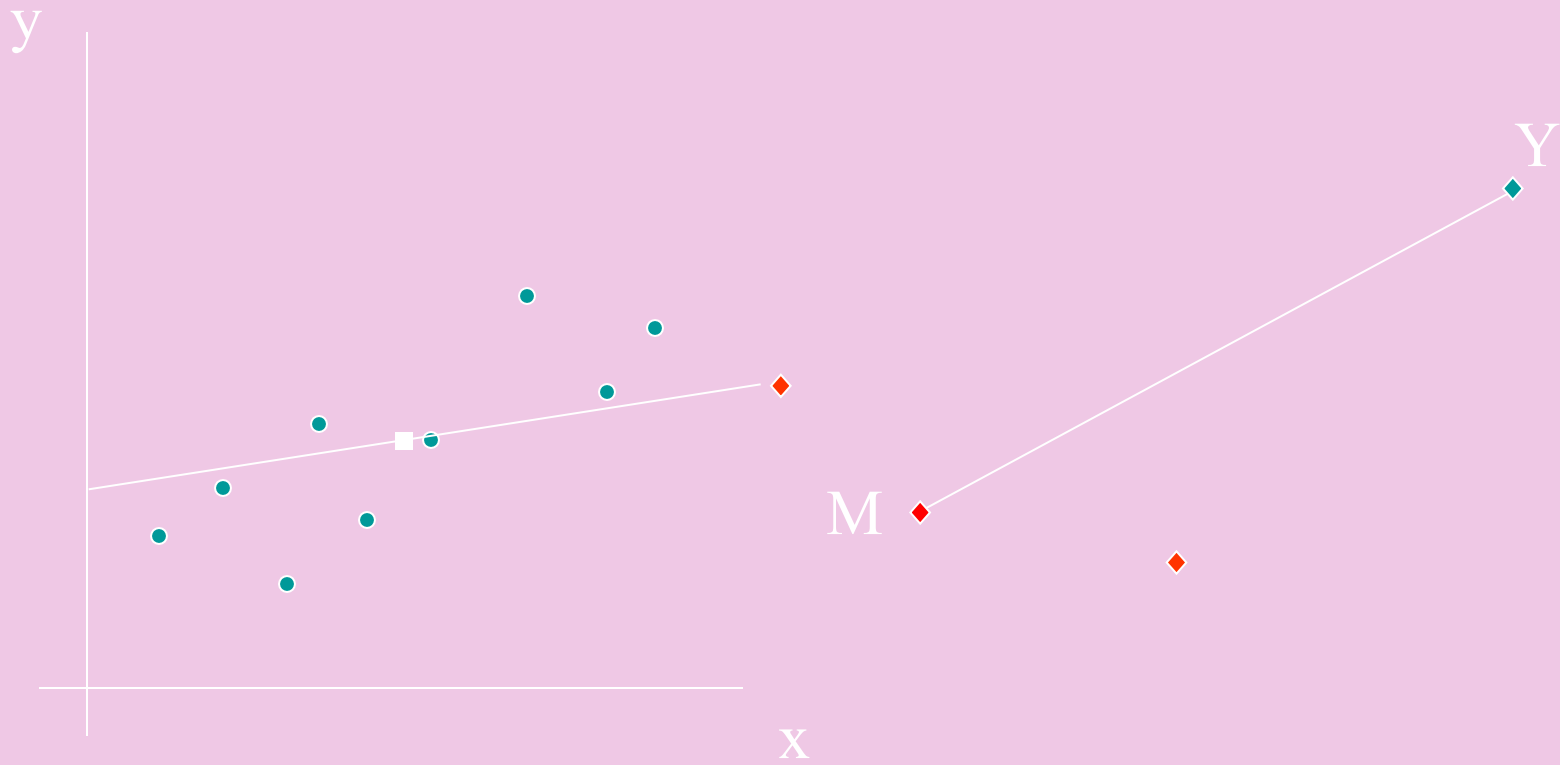
Geometry





Regression

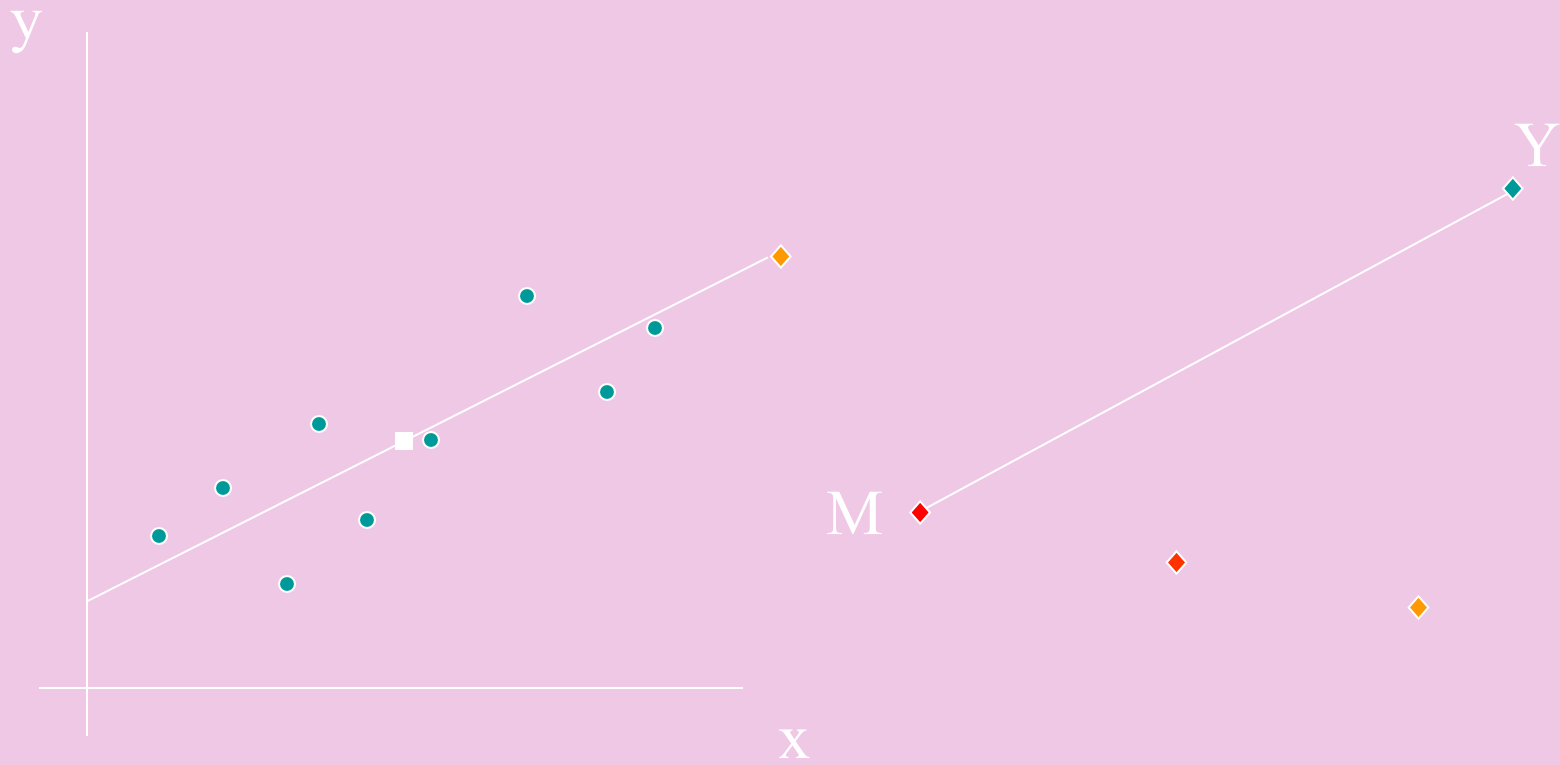
Geometry





Regression

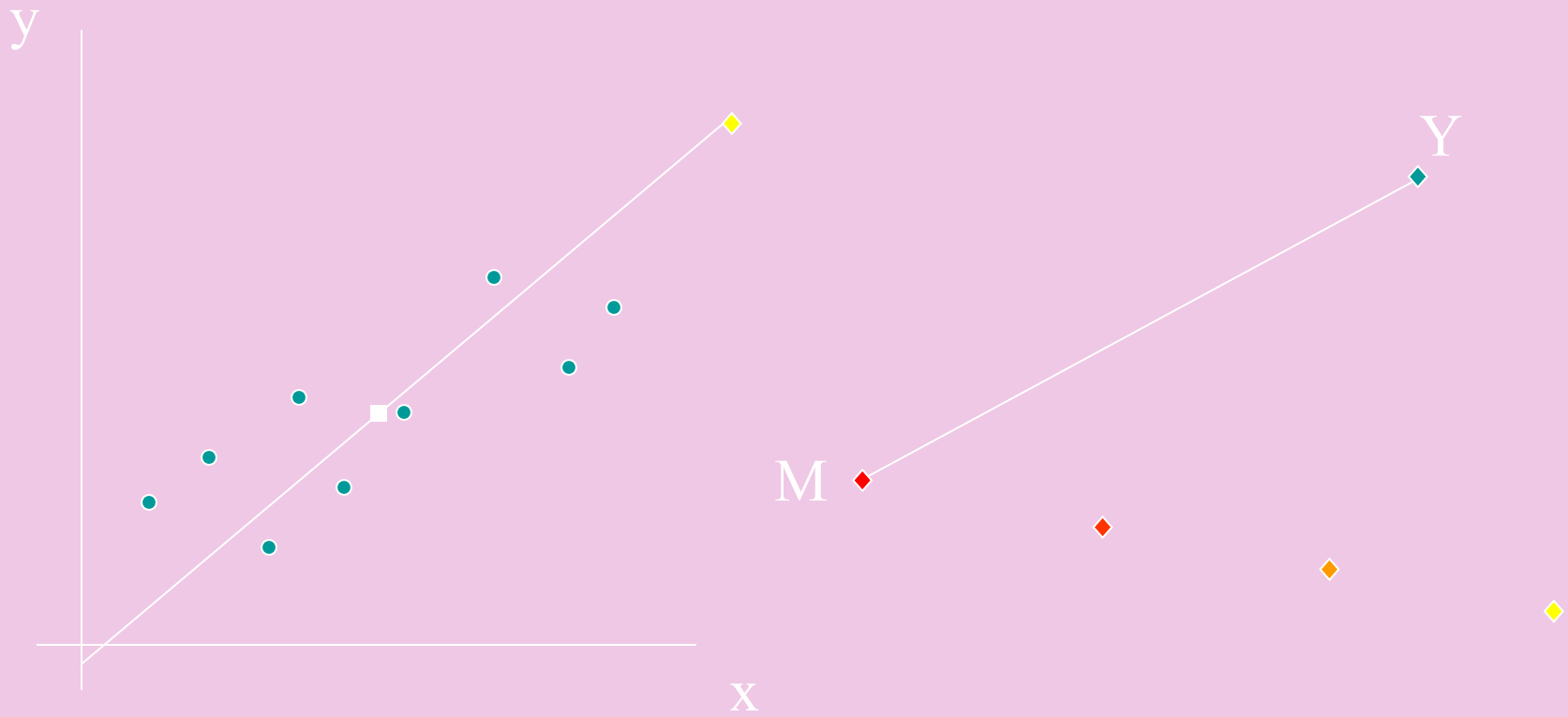
Geometry





Regression

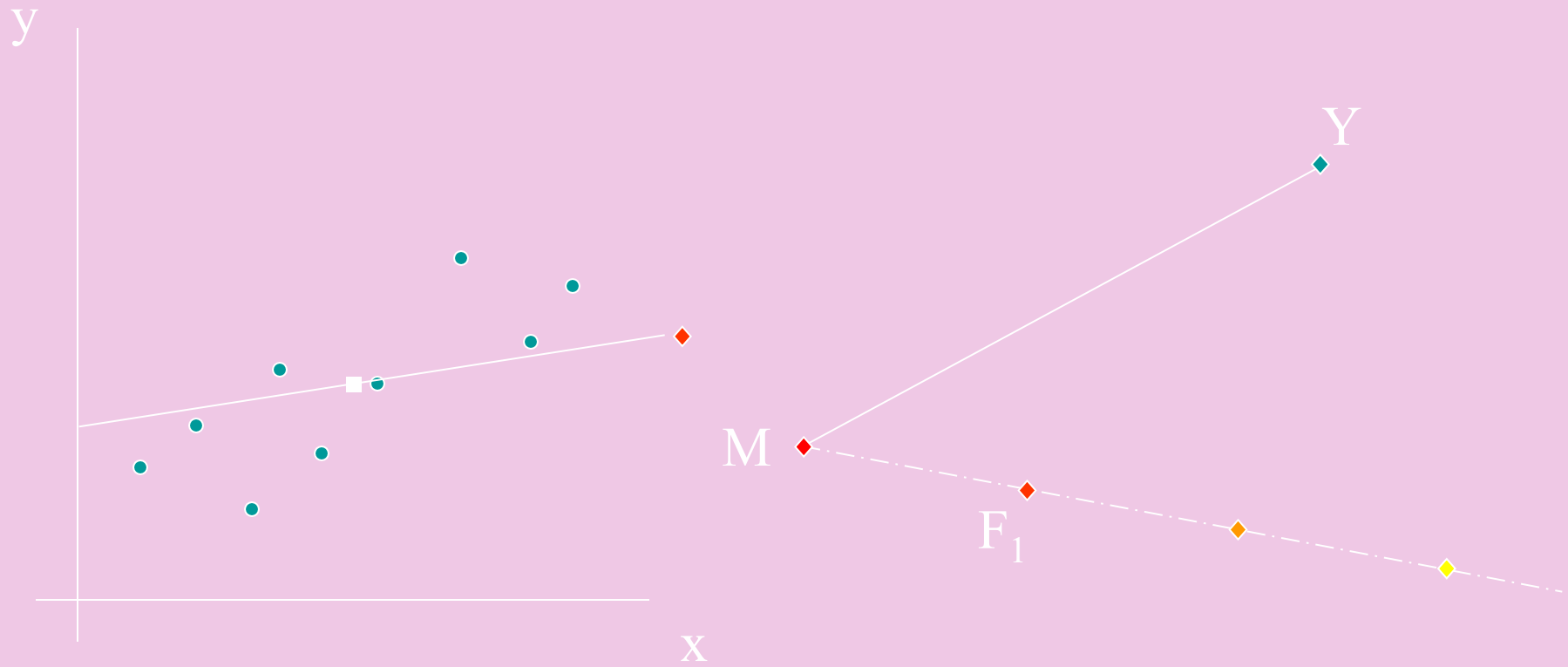
Geometry





Regression

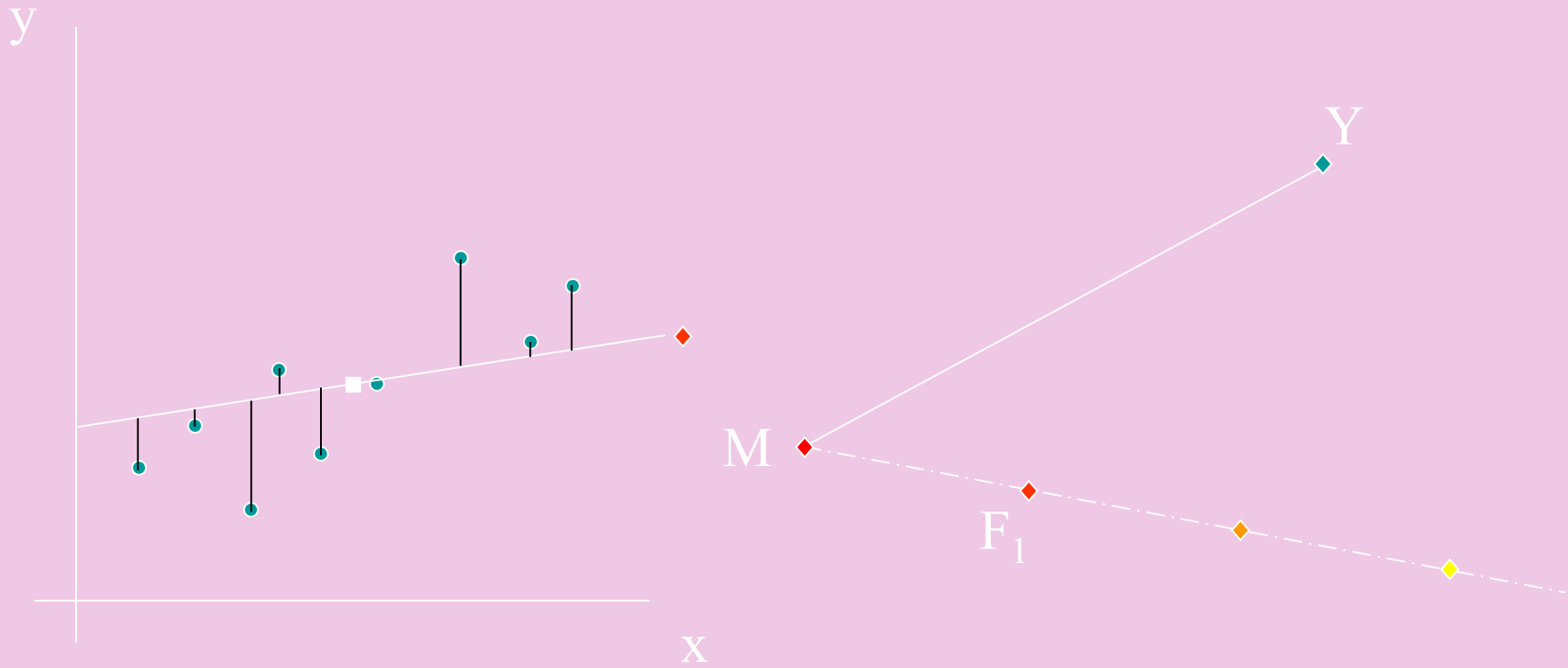
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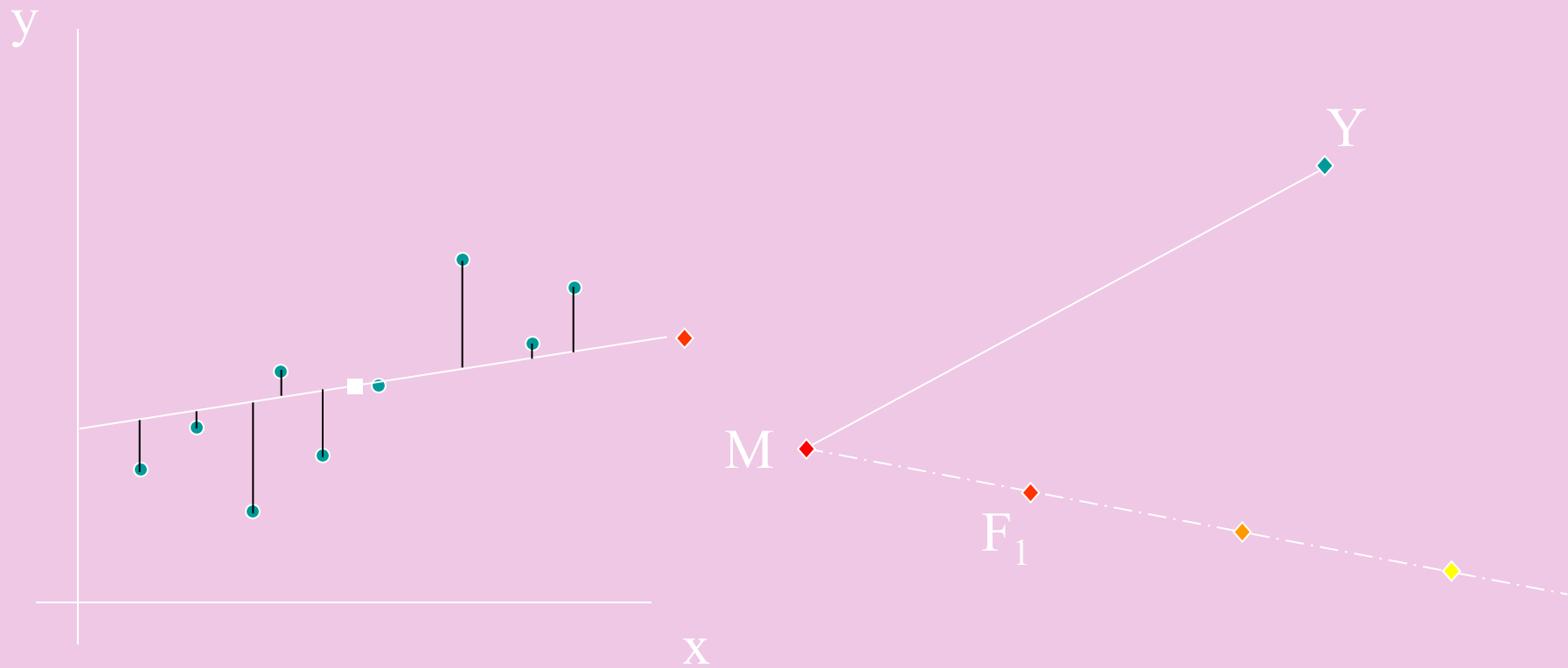
Regression

Geometry





Geometry

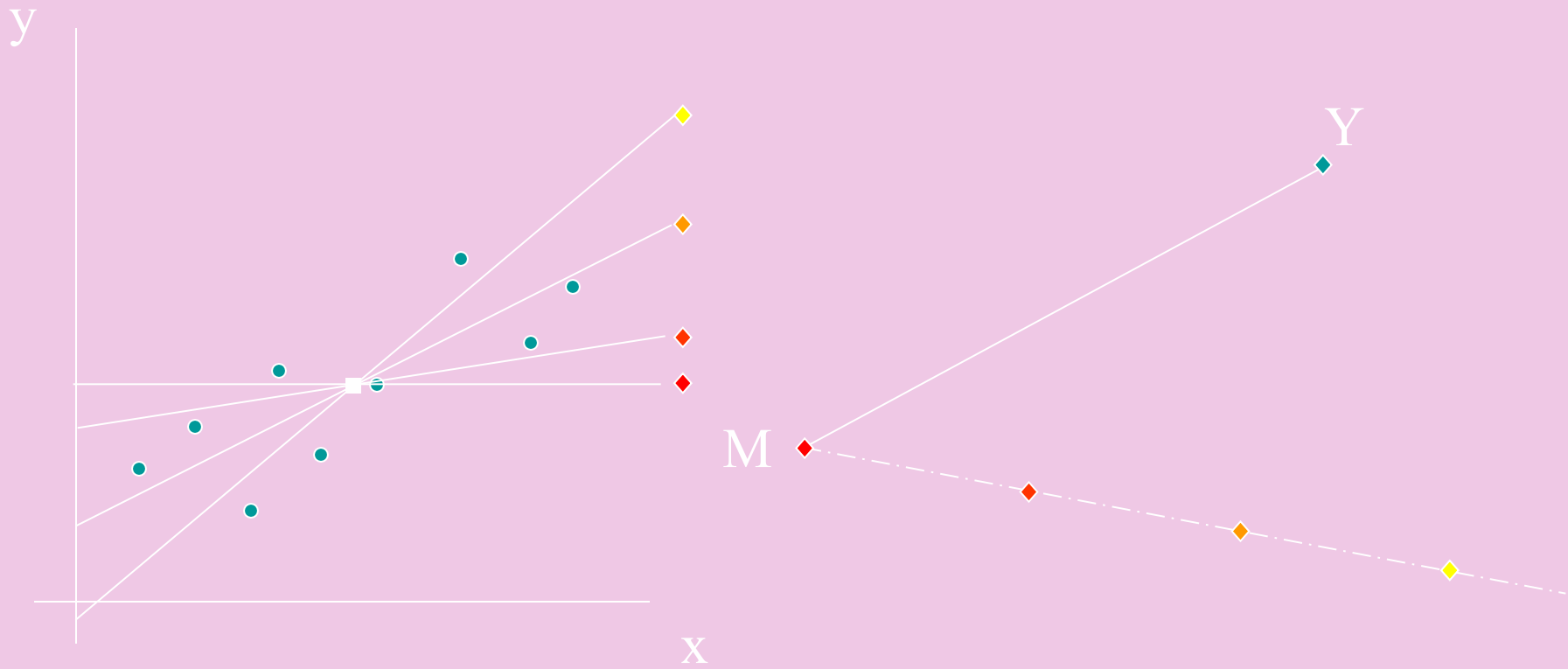


Sum of squares of residuals = Squared distance from Y to F_1



Regression

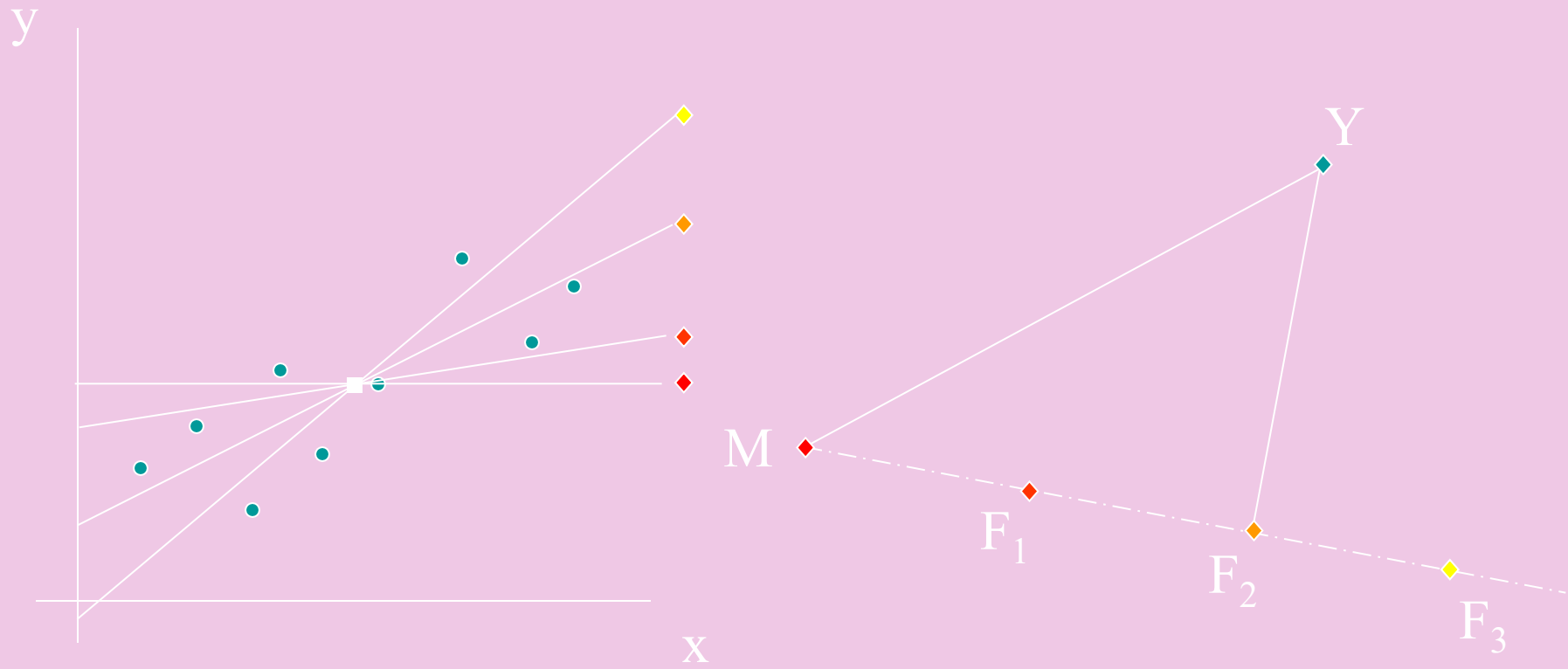
Geometry





Regression

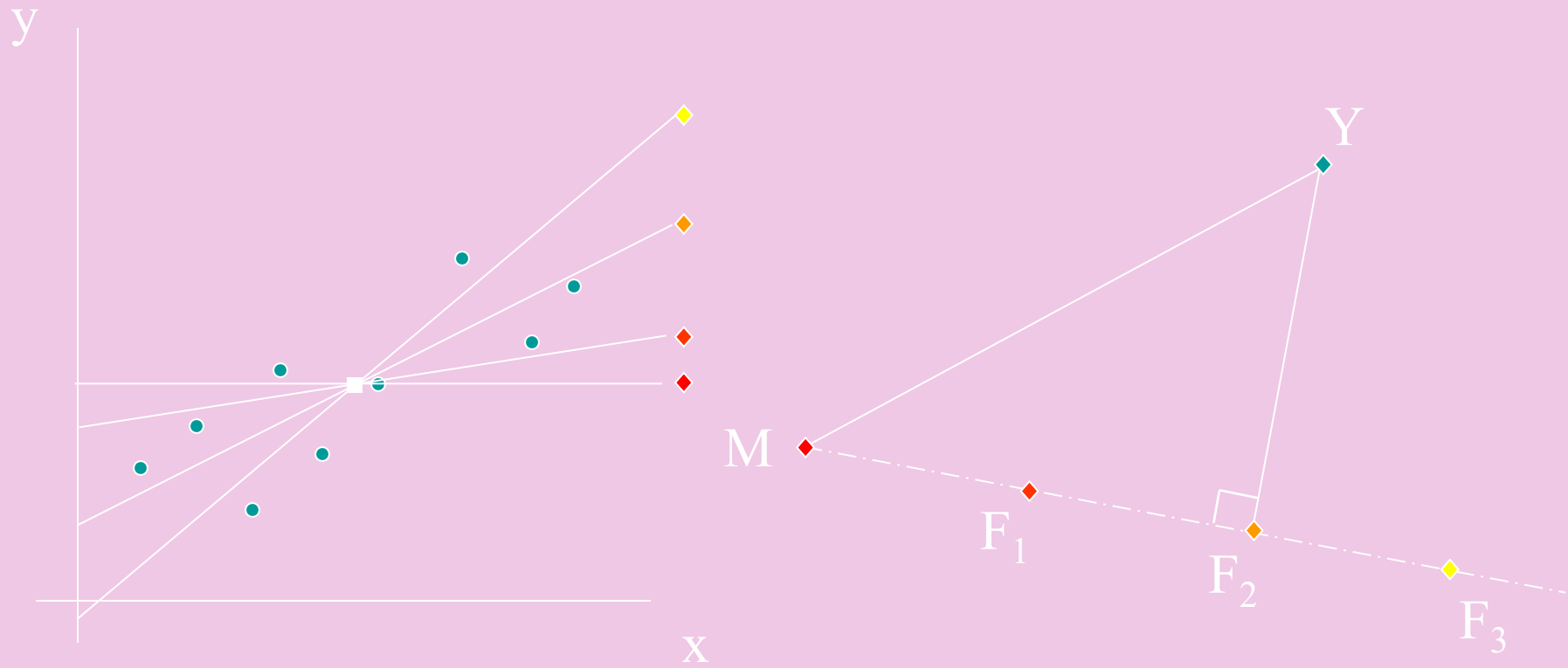
Geometry





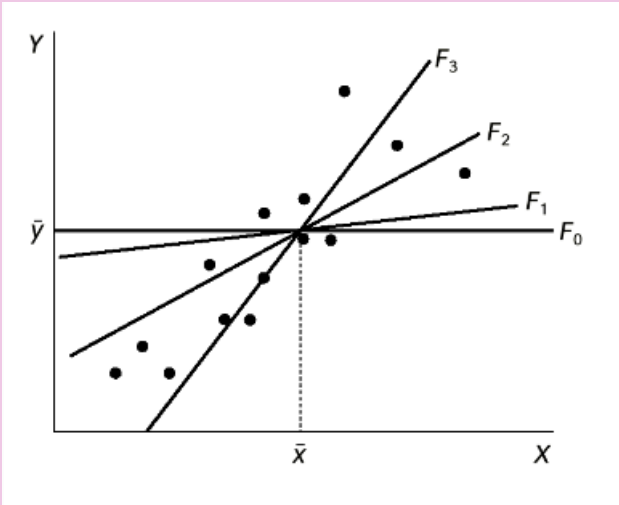
Regression

Geometry

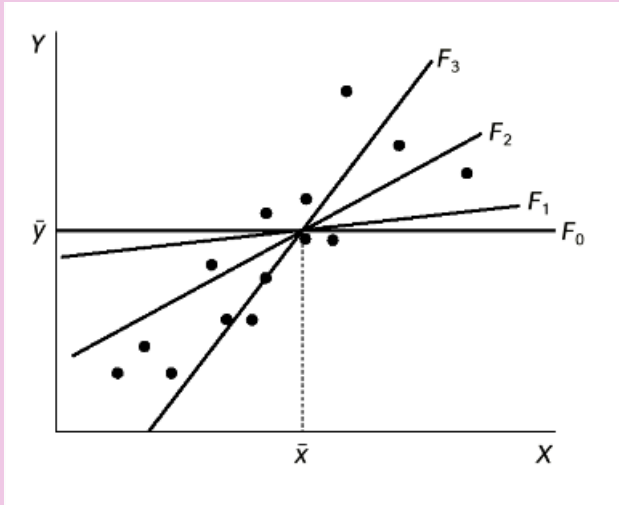




Regression

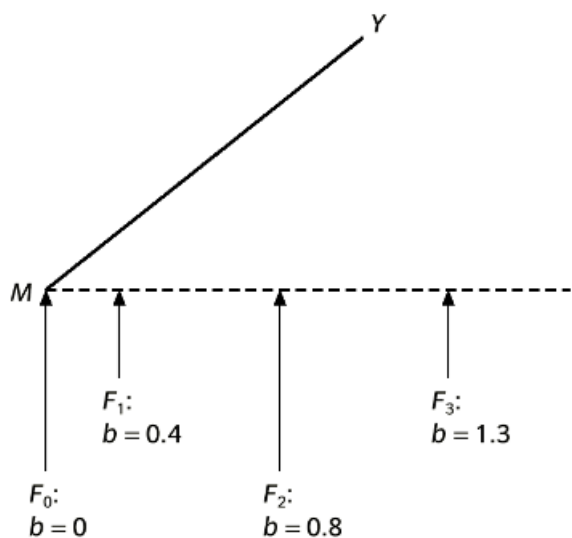
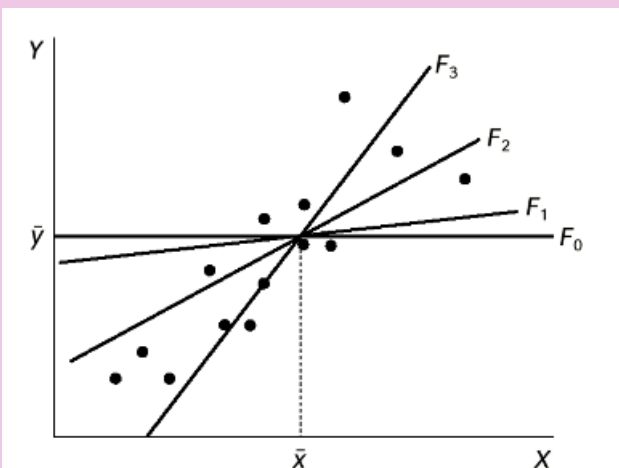


Geometry



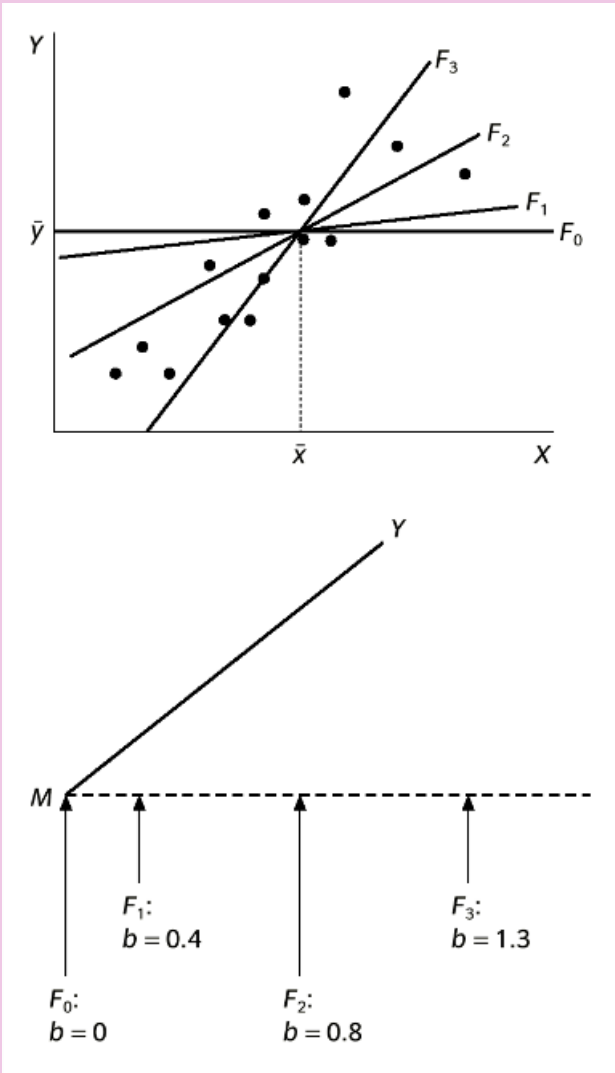
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14.9	32.5	32.0	31.6	31.0
14.3	32.5	31.8	31.1	30.2
19.3	32.5	33.8	35.1	36.8
14.7	32.5	31.9	31.4	30.7
12.4	32.5	31.1	29.6	27.8
14.7	32.5	31.9	31.4	30.7
12.5	32.5	31.1	29.7	27.9
17.9	32.5	33.2	34.0	34.9
16.5	32.5	32.7	32.9	33.1
18.6	32.5	33.5	34.5	35.8
17.5	32.5	33.1	33.6	34.4
19.5	32.5	33.9	35.3	37.0
17.5	32.5	33.1	33.6	34.3
14.4	32.5	31.8	31.1	30.3

Geometry

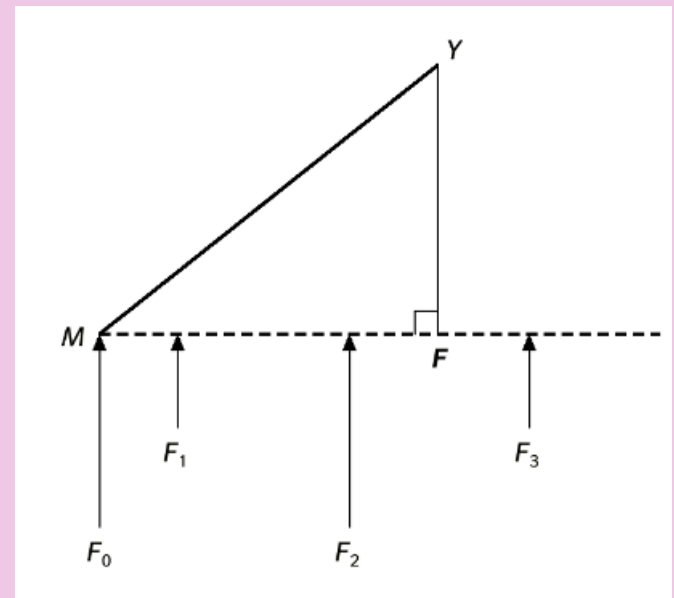
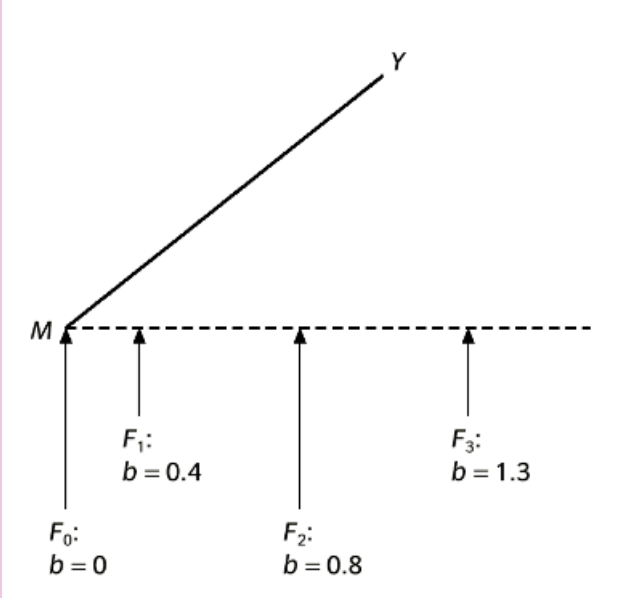
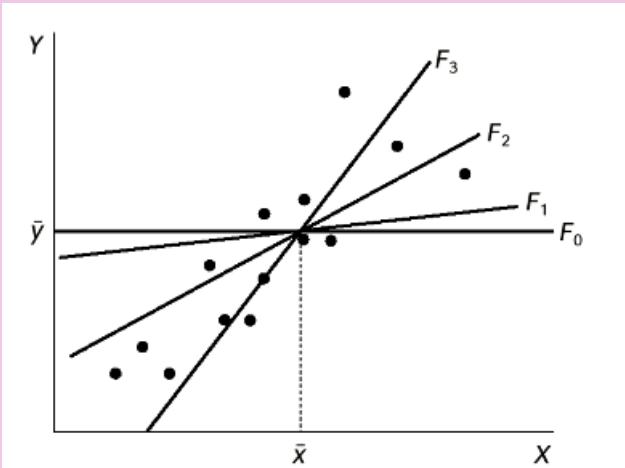


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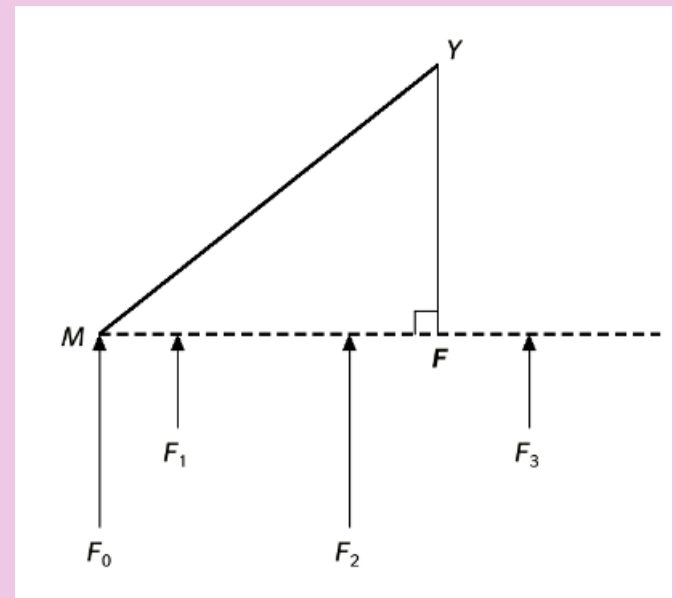
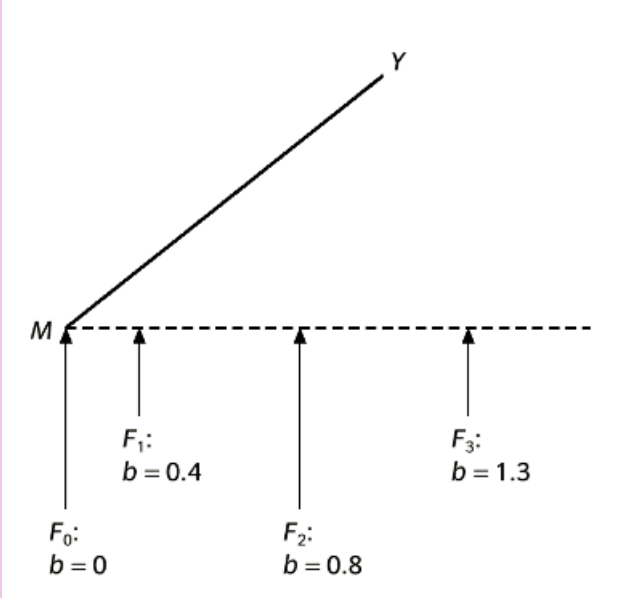
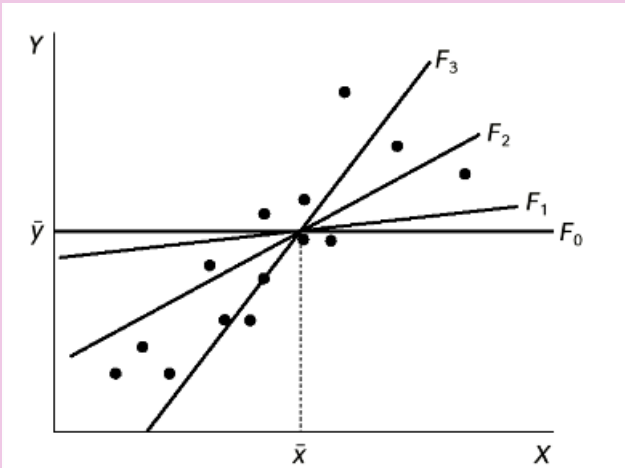
Geometry



Geometry



Geometry



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