Lecture 31

More Extrema Stories

Table of Contents

1) Fitting

2) Snell's law

3) Polygon area

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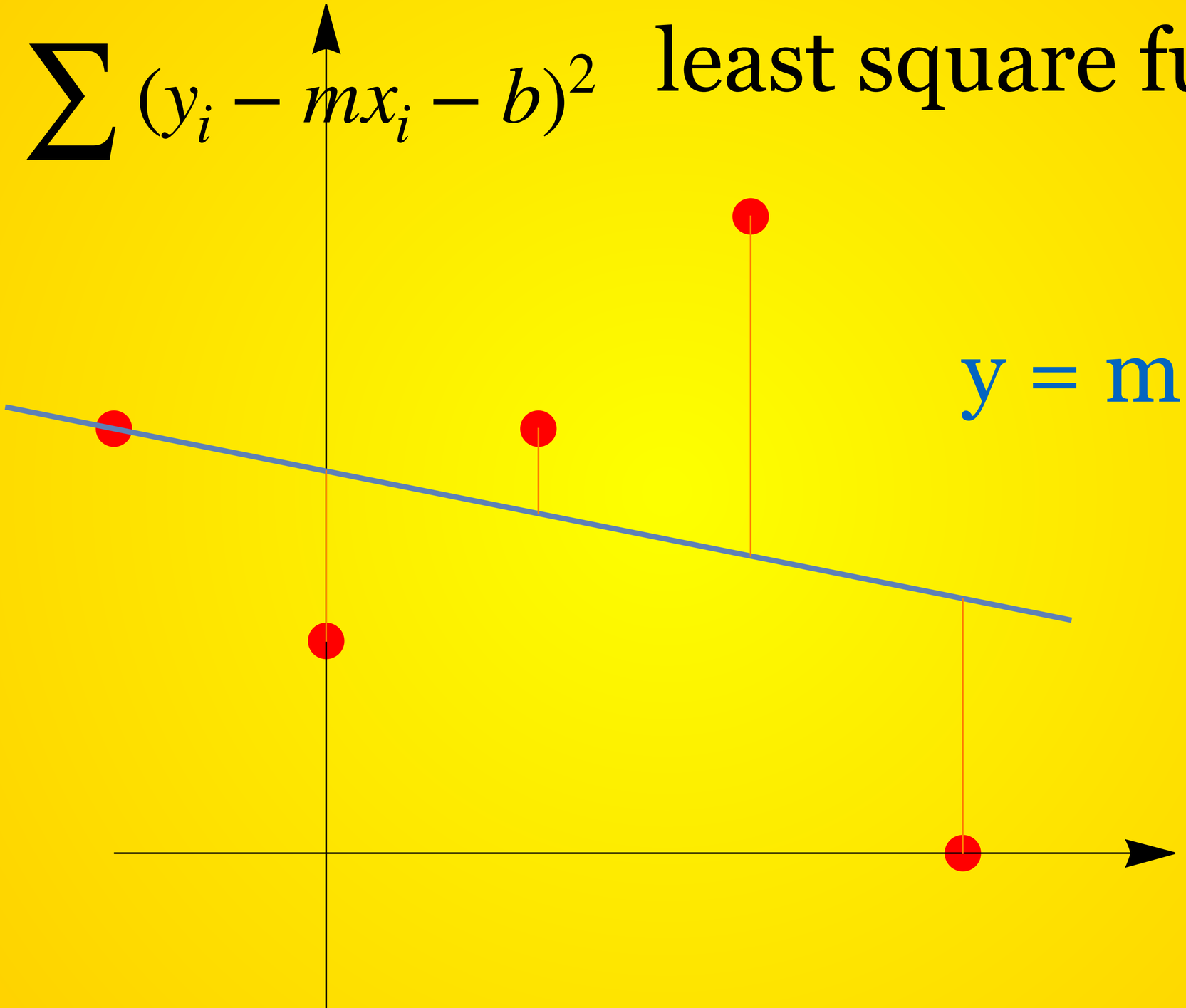
1) Data Fitting

$$f = \sum (y_i - mx_i - b)^2$$

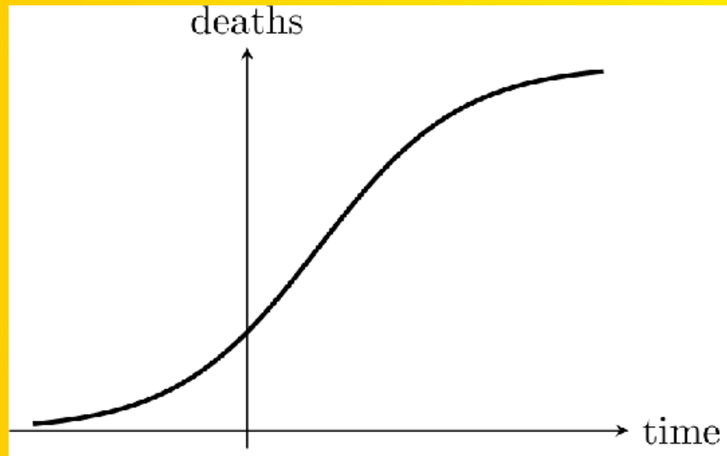
least square functional



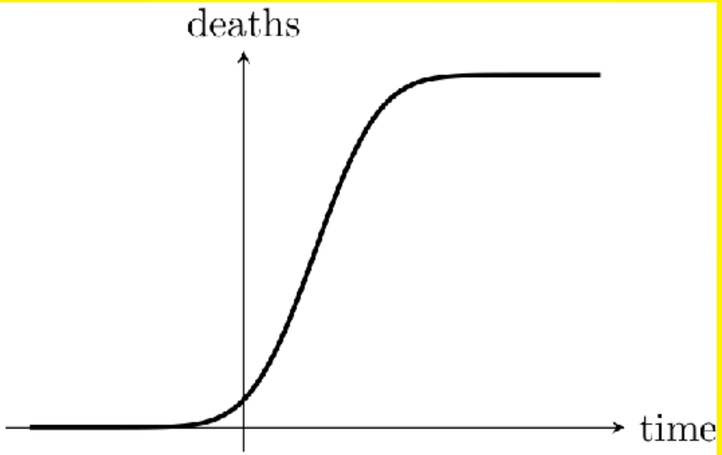
y = m x + b

Data fitting problem during Pandemic

- Models

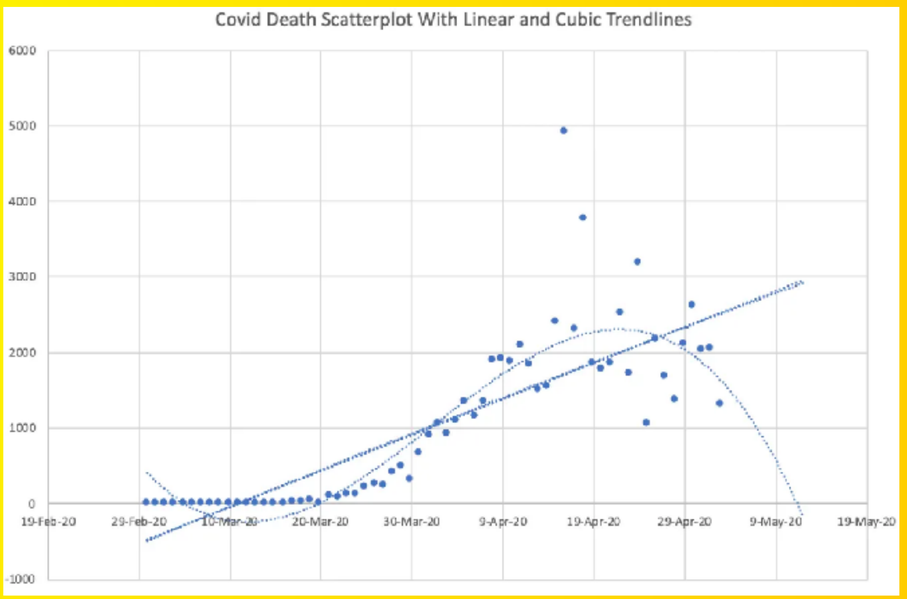


$$D_1(t) = \frac{p}{1 + e^{-\alpha(t-\beta)}}$$



$$D_2(t) = \frac{p}{2}\left(1 + \frac{2}{\sqrt{\pi}}\int_0^{\alpha(t-\beta)} e^{-\tau^2}\, d\tau\right)$$

- Wrong fit



"With four parameters I can fit an elephant, and with five I can make him wiggle his trunk"

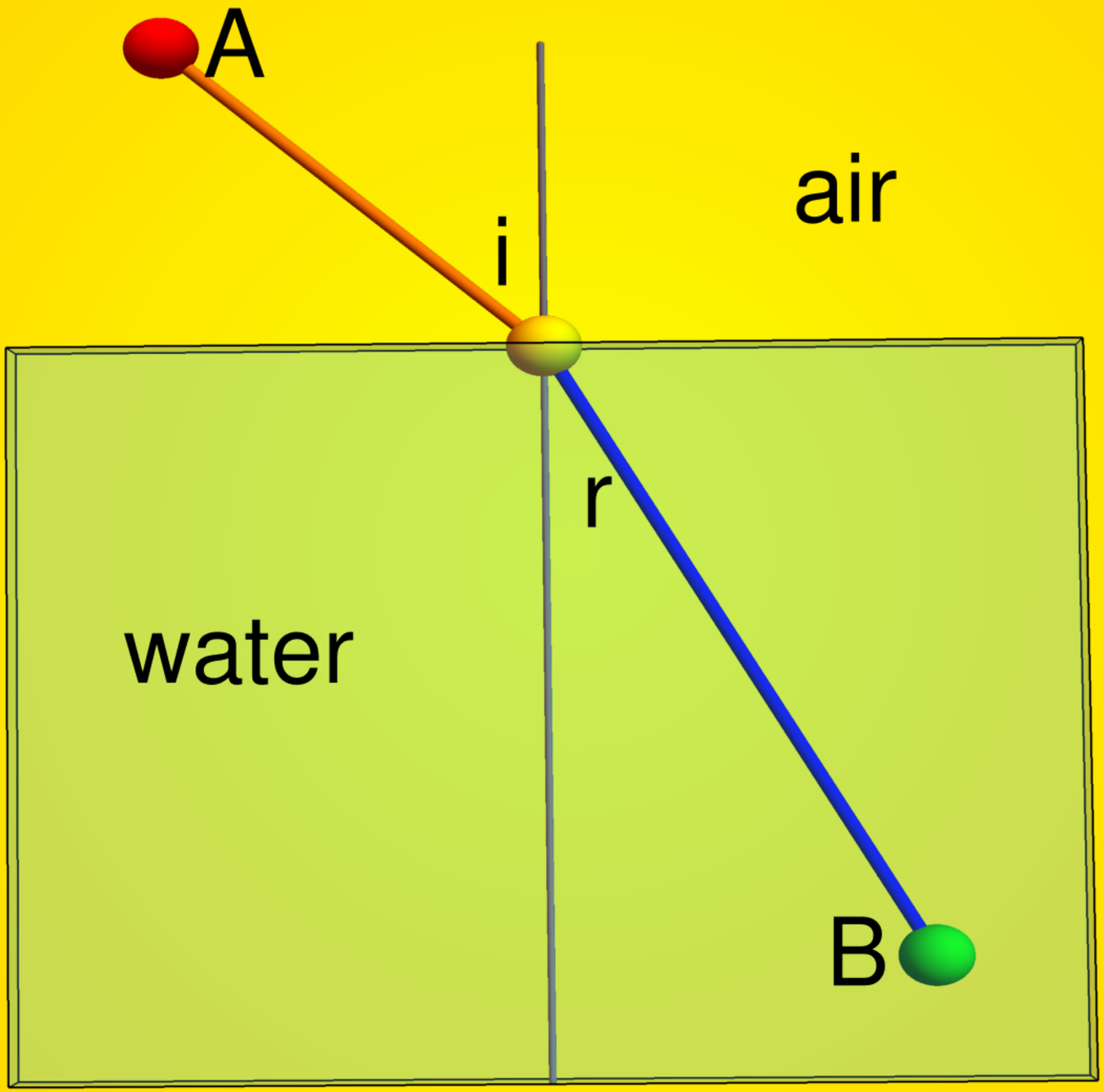
Freeman Dyson (1923-2020) 1998 https://www.webofstories.com/play/freeman.dyson/94

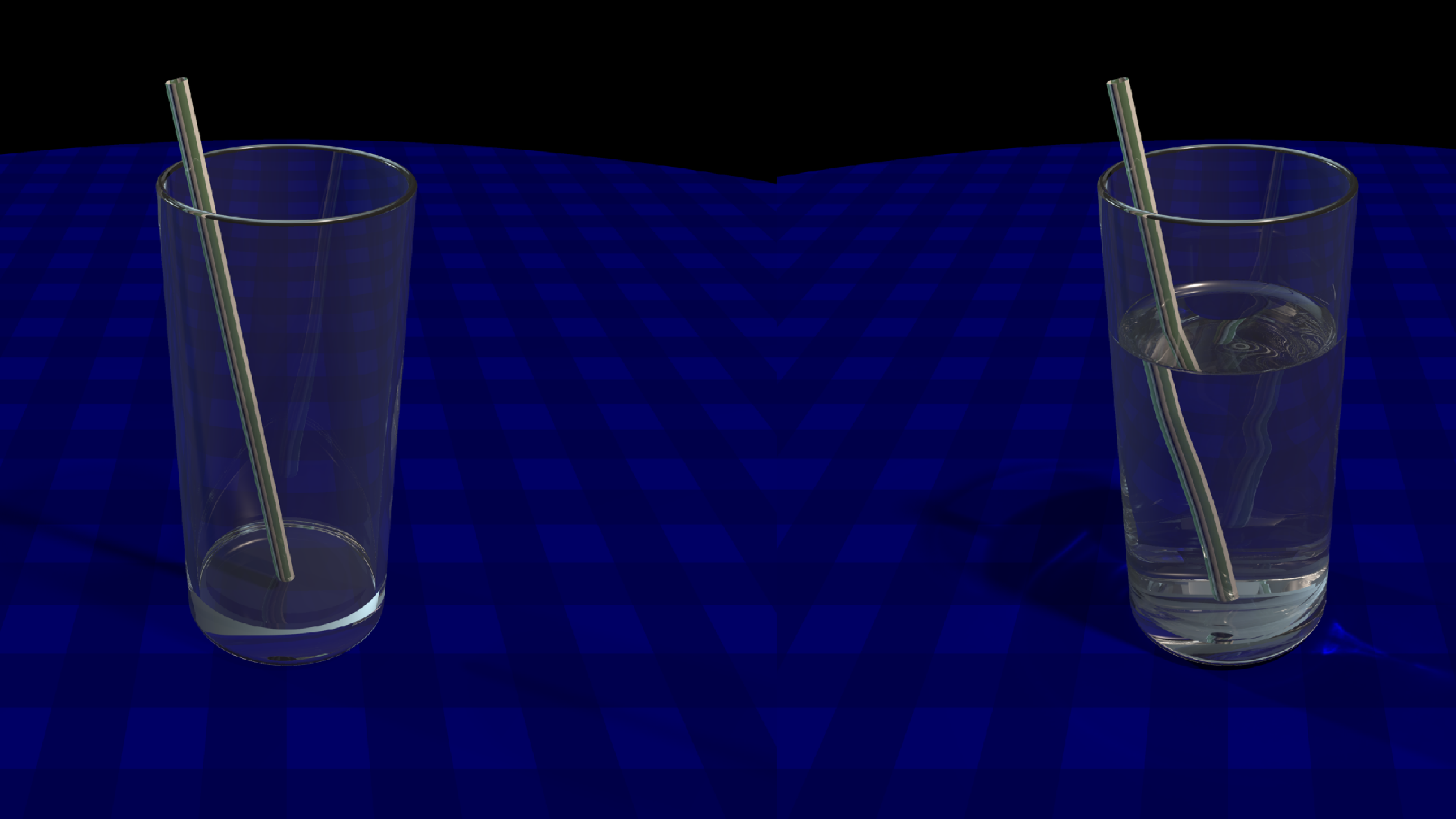
5) Machine learning

]=

4
3
2
1

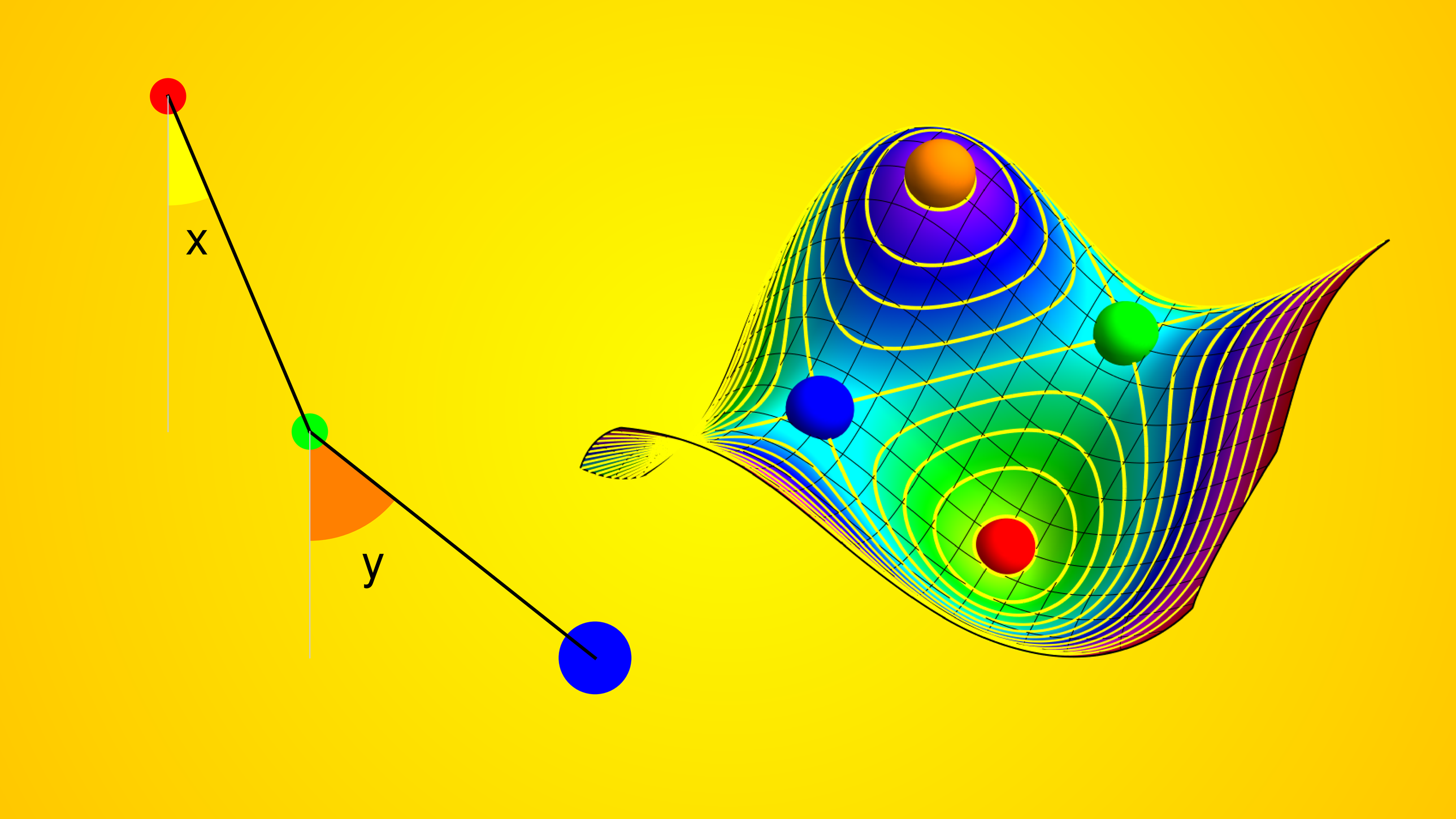
2) Refraction


A
i
air
water
r
B



3) Area of Polygons

4) Physics


x
y

THE END