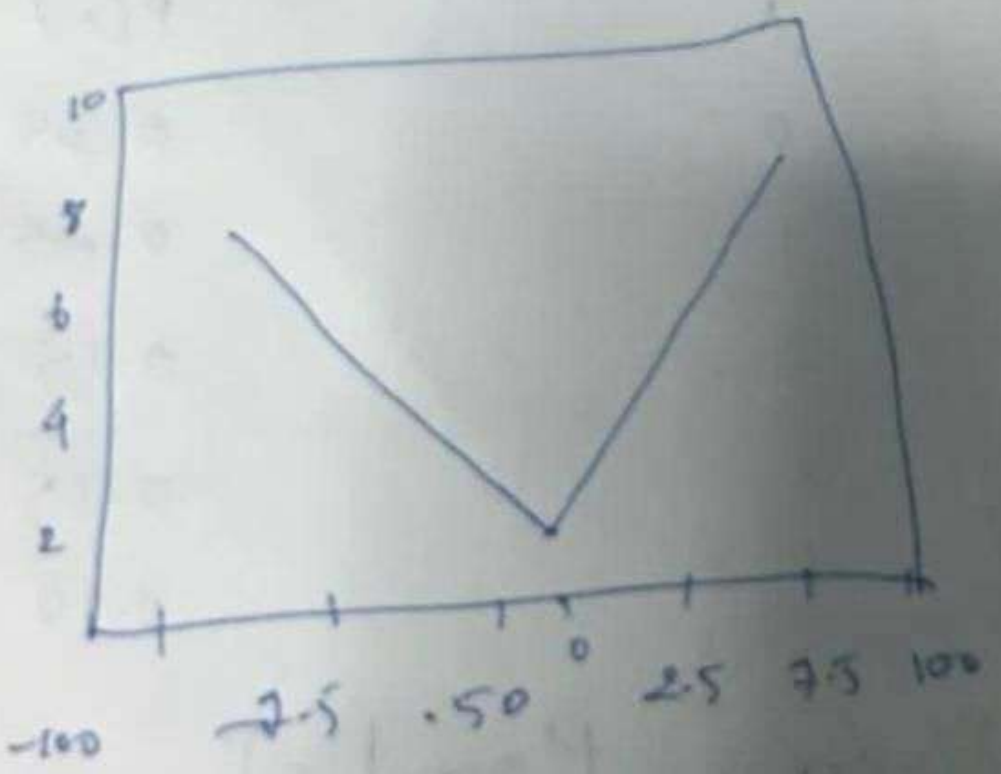
Log - cosh loss:

log - cosh is the logarithm of hyperbolic cosine prediction error. It is smoother than L2.

$$L(Y, Y_P) = \sum_{i=1}^{n} \log(\cosh(y_i P - y_i))$$



log cosh Vs prediction

$= (0-1.4)^2 \times 0.35 + (1-1.4)^2 \times 0.15$

$+ (2-1.4)^2 + (3-1.4)^2 \times 0.15 + (4-1.4)^2 \times 0.1$

$\times 0.15$

$\sigma^2 = 1.84$

$\sigma = 1.36$

Business Moment - III

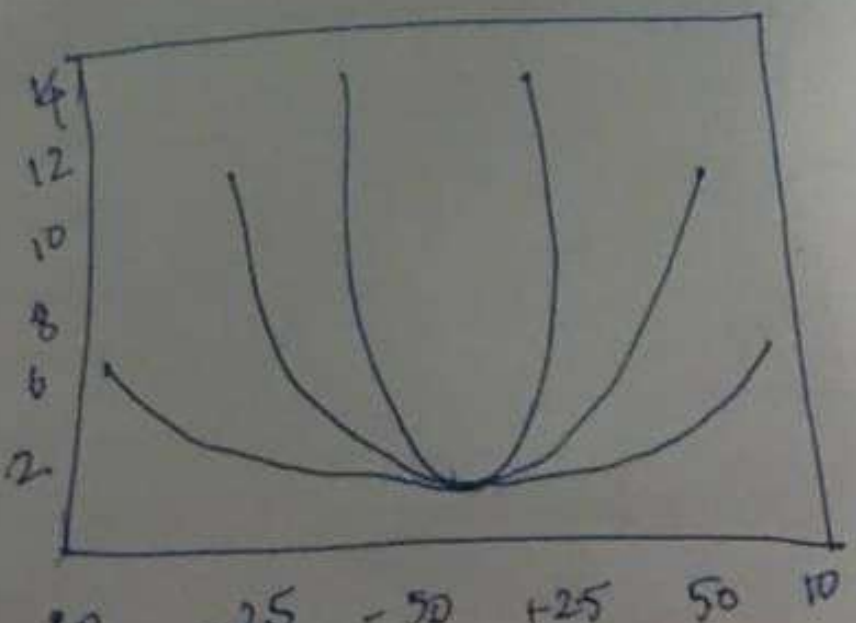
$$S_x = \Sigma [(x_i - \mu_x)(\sigma)^3 P(x)]$$

$$= \left[\left(\frac{0-1.4}{1.36}\right)^3 \cdot 0.35\right] + \left[\left(\frac{(1-1.4)}{1.36}\right)^3 \cdot 0.25\right]$$

$$+ \left[\left(\frac{2-1.4}{1.36}\right)^3 \cdot 0.15\right] + \left[\left(\frac{3-1.4}{1.36}\right)^3 \cdot 0.15\right]$$

$$+ \left[\left(\frac{4-1.4}{1.36}\right)^3 \cdot 0.1\right]$$

$= 0.568$



Business Moment - IV:

$$K = \Sigma \left[\left(\frac{x_i - \mu_x}{\sigma} \right)^4 \cdot P(x) - 3 \right)$$

$$= \left\{ \left(\frac{0 - 1.4}{1.36} \right)^4 \cdot 0.35 \right] + \left[\left(\frac{1 - 1.4}{1.36} \right)^4 \cdot 0.35 \right]$$

$$+ \left[\left(\frac{2 - 1.4}{1.36} \right)^4 \cdot 0.15 \right] + \left[\left(\frac{3 - 1.4}{1.36} \right)^4 \cdot 0.15 \right]$$

$$+ \left[\left(\frac{4 - 1.4}{1.36} \right)^4 \cdot 0.1 \right] - 3$$

$$K = -0.9762.$$

ML & AL Week 2
Challenge

1. x Random Variable : No of terms

P(x) = Probability of x

x	P(x)
0	0.35
1	0.25
2	0.15
3	0.15
4	0.10

Business Moment - I

Central Tendency (Mean)

$M = \Sigma (x_i) P(x)$

$= [(0 \times 0.35) + (1 \times 0.25) + (2 \times 0.15) + (3 \times 0.15) + (4 \times 0.10)]$

$= 0 + 0.25 + 0.30 + 0.45 + 0.4$

$M = 1.4$

Business Moment - II

Measure of dispersion Variance

$= \Sigma (x_i - \mu_x)^2 - P(x)$