

8

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N R N N R R N N R N R N NR

$\frac{1}{2}$

$\frac{2}{5}$ $\frac{3}{6}$

$\frac{4}{9}$

$\frac{5}{11}$

$\frac{6}{14}$

a) P@10
1

b) AP

R = 25

(a) P@10

$$\frac{4}{10} = 0.4$$

3

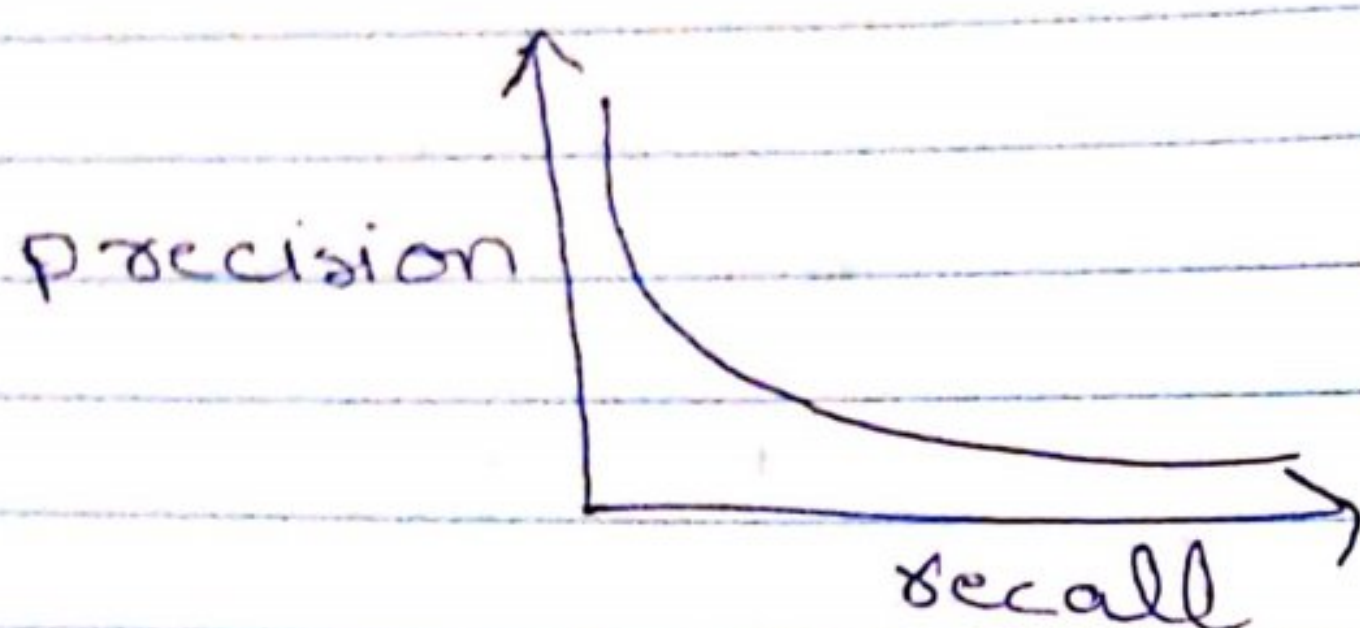
b) AP

$$\left(\frac{1}{2} + \frac{2}{5} + \frac{3}{6} + \frac{4}{9} + \frac{5}{11} + \frac{6}{14} \right) \div 25$$

$$= 0.109$$

Q2 //

Average precision is the area under precision - recall curve.



function of curve = $P(x)$

If we integrate this $\rightarrow \int_0^1 P(x) dR$

$$\rightarrow \int_0^1 P(x) \Delta R$$

here ΔR will always be $\frac{1}{R}$

$$\int_0^1 \frac{P(x)}{R}$$

Since \int is summation so formula become $\frac{\sum P(x)}{R}$
 $R = \text{no of relevant documents}$

Same formula of Average Precision

area under

(13)



(a) No smoothing in d3

$$P(\text{information}) \times P(\text{retrieval})$$

$$\frac{1}{5} \times \frac{0}{5}$$

$$= \boxed{0} \text{ Ans}$$

(1)

(b) Dirichlet smoothing in d3 ($\mu=3$)

$$\left[\frac{N}{N+u} P(\text{information in doc}) + \frac{u}{N+u} P(\text{information in collection}) \right]$$

x

$$\left[\frac{N}{N+u} P(\text{retrieval in doc}) + \frac{u}{N+u} P(\text{retrieval in collection}) \right]$$

$$= \left[\frac{5}{5+3} \left(\frac{1}{5} \right) + \frac{3}{5+3} \left(\frac{2}{18} \right) \right]$$

(2)

$$\left[\frac{5}{5+3} (0) + \frac{3}{5+3} \left(\frac{5}{18} \right) \right]$$

$$= 5/72 \approx 0.0174$$