

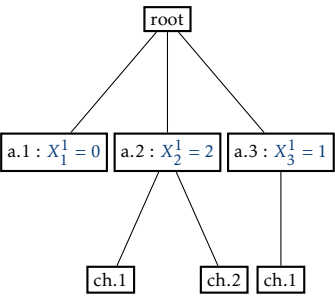
- Distribution of  $\boxed{Z_n}$  obtained from generating  $\Rightarrow f_n(\theta) = E(\theta^{Z_n}) = \sum \theta^k \boxed{P(Z_n = k)}$
- $f_{n+1}(\theta) = E\theta^{Z_{n+1}} = E\left(\boxed{E\theta^{Z_{n+1}}|Z_n}\right) = \sum \boxed{E\left(\theta^{Z_{n+1}}|Z_n\right)}P(Z_n = k) \leftarrow \boxed{E\theta^{Z_{n+1}}|Z_n}$  is the random variable here

1 Chapter 0

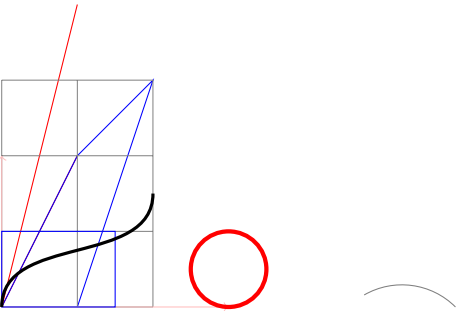
$$Z_+ = [0, 1..] \quad N = [1..]$$
$$f(\theta) = E(\theta^X) = \sum \theta^k P(X = k) = P(X = 0) + \sum_{k=1} \theta^k P(X = k)$$
$$f'(\theta) = E(\theta^X) = \sum k \theta^{k-1} P(X = k) \leftarrow \text{differentiate wrt } \theta$$
$$\text{mean} = \mu = f'(1) = \sum_k k P(X = k) \quad f(1) = \sum P(X = k) = 1$$

$\{X_r^m\}$  = double series of random variables IID  
 $X_{r+1}^m$  = the children in r+1 generation  
 $Z_{r+1}^m = X_1^m + \dots + X_{Z_r^m}^m$  = sum of the children in r+1 generation

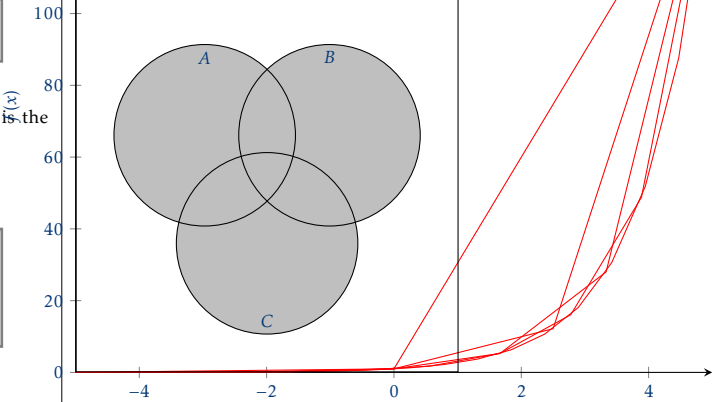
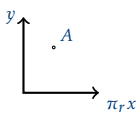
1.1 my example



2 Chapter 0



3 Chapter 0



$$H_{1mmmmm} = \{W_2(x), W_1(x), R_3(x), R_1(x), W_2(y), R_3(y), R_3(z), R_2(x)\}$$
$$H_{gggg2} = \{R_3(z), R_3(y), W_2(y), R_2(z), W_1(x), R_3(x), W_2(x), R_1(x)\}$$
$$H_{3ggg} = \{R_3(z), W_2(x), W_2(y), R_1(x), R_3(x), R_2(z), R_3(y), W_1(x)\}$$
$$H_{4g} = \{R_2(z), W_2(x), W_2(y), W_1(x), R_1(x), R_3(x), R_3(z), R_3(y)\}$$

(1)

