$$= \int_{\partial \alpha}^{\infty} f_{x}(x) dx = U \int_{t \to \infty}^{\infty} f_{x}(x) dx$$

$$\frac{\int_{A}^{A} dx}{\int_{A}^{A} (x) dx} = \frac{\int_{A}^{A} (x) dx}{\int_{A}^{A} (x) dx}$$

$$\frac{\int_{A}^{A} dx}{\int_{A}^{A} (x) dx} = \frac{\int_{A}^{A} (x) dx}{\int_{A}^{A} (x) dx}$$

$$\frac{1}{1+\infty} \int_{A}^{\beta} dn$$

$$\frac{1}{2} \int_{A}^{\beta} dn$$

$$\frac{1}{2} \int_{A}^{\beta} dn$$

$$\frac{1}{2} \int_{A}^{\beta} dn$$

$$\beta \alpha^{\beta} \lim_{t \to \infty} \left[\frac{x^{-\beta}}{-\beta} \right]^{t}$$

$$\begin{array}{c|c}
 & t \to \infty & -\beta \\
 & -\beta & 2\alpha \\
 & -\alpha^{\beta} & \lim_{t \to \infty} \left[x^{-\beta} \right]^{t}
\end{array}$$

$$\frac{1}{1}(-\alpha^{\beta})(-(2\alpha^{\beta})) \Rightarrow \alpha^{\beta} = \frac{1}{2^{\beta}}$$

(c) Mean =
$$EX = \int_{a}^{\infty} \pi f_{x}(x) dx$$

=
$$\beta \propto^{\beta} t \int^{b} x^{-\beta} dx = \beta \propto^{\beta} \lim_{t \to \infty} \left[\frac{9t}{-\beta+1} \right]$$

$$= \frac{\beta \alpha^{\beta}}{-\beta+1} \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

$$= \frac{\beta \alpha^{\beta}}{-\beta+1} \left[\frac{1}{t^{+\beta-1}} - \frac{1}{\alpha^{\beta-1}} \right]$$

= Note that
$$\beta$$
? I for it to converge
= $\beta \propto^{\beta} \left(-1\right) = \beta \propto^{\beta} \left(-1\right) \left(\alpha^{\beta + 1}\right) \left(\alpha^{\beta + 1}\right)$

$$=\frac{\alpha \beta}{(\beta-1)}$$

$$EX^{2} = \int_{\alpha}^{\infty} n^{2} \frac{\beta \alpha^{\beta}}{\alpha^{\beta+1}} dn$$

$$= \int_{\alpha}^{\alpha} \beta \alpha^{\beta} dx =$$

$$= \int_{\alpha}^{\infty} \frac{\beta \alpha^{\beta}}{\alpha^{\beta}} dn =$$

$$= \int_{\alpha}^{\infty} \frac{\beta \alpha^{\beta}}{\pi^{\beta-1}} d\pi = \lim_{\alpha \to \infty} \int_{\alpha}^{t} \frac{\beta \alpha^{\beta}}{\pi^{\beta-1}} dx$$

= (BXB) lim st n-B+1dn

= $(\beta \alpha^{\beta})$ lim $\left[\frac{\lambda^{-\beta+2}}{+\beta+2}\right]^{t}$

 $= \frac{(\beta \alpha^{\beta})}{(-\beta+2)} = \left[t^{-\beta+2} - \alpha^{-\beta+2} \right]$

 $= \left(\begin{array}{c|c} \beta \alpha^{\beta} & \text{it} & \frac{1}{\beta^{-2}} & -\frac{1}{\alpha^{\beta-2}} \\ -\beta + 2 & \text{the } t^{\beta-2} & \alpha^{\beta-2} \end{array}\right)$

 $= \frac{\beta \alpha^{\beta}}{-\beta+2} \begin{bmatrix} -1 \\ \alpha^{\beta-2} \end{bmatrix} \quad (1f \beta 72)$

 $=\frac{\beta\alpha^{P}}{(\beta-2)(\alpha^{B-2})}=\frac{\beta\alpha^{2}}{\beta-2}$

$$EX^{2} = \int_{\alpha}^{\alpha} x^{2} \frac{1}{x^{3}} dx$$

$$= \int_{\alpha}^{\alpha} \beta x^{3} dx$$

Variance
$$\Rightarrow EX^2 - (EX)^2$$

$$\Rightarrow \frac{\beta \alpha^2}{\beta - \lambda} - (\frac{\Delta \beta}{\beta - 1})^2$$

(d)
$$F_{x}(n) = \int_{x}^{x} f_{x}(t) dt$$

We know $x = 1$, $y = 4$

$$= \int_{x}^{x} \frac{1}{t^{2}} dt = \begin{bmatrix} -1 \\ -1 \\ x^{4} \end{bmatrix}$$

$$= -1 + 1 \Rightarrow \begin{bmatrix} 1 - 1 \\ x^{4} \end{bmatrix}$$

$$= -1 + 1 \Rightarrow \begin{bmatrix} 1 - 1 \\ x^{4} \end{bmatrix}$$

$$F_{x}(x) \Rightarrow x = 1 - 1$$

$$1 = 1 - x$$

$$x^{4}$$

$$u^4 = \frac{1}{1-x} = \frac{1}{4\sqrt{1-x}}$$

(e) Mean
$$\Rightarrow EX = \alpha\beta = (1)(4) = 4$$

$$(\beta-1) = (4-1) = 3$$

$$SD(n) = \int Var(X) = \beta\alpha^{2} - (\alpha\beta)^{2}$$

$$\beta^{-2} = \beta^{-1}$$

$$= (4)(1) - (1.4)^{2}$$

$$= \sqrt{2} - 4/3 \Rightarrow \sqrt{2/3}$$