

$$\int \frac{y}{dy} \mathcal{K} = y^y \mathcal{K} + \sqrt{1-y^2}$$

$$\int \frac{y^2}{dy} \mathcal{K} = \frac{y^3}{3} \mathcal{K} + \frac{y^2+2}{9} \sqrt{1-y^2}$$

$$\int \frac{y^2}{dy} \mathcal{K} = \frac{y^3}{3} \mathcal{K} - \frac{1}{6} y^2 + \frac{1}{6} y^{2+1} \mathcal{K}$$

$$2 \int \frac{y}{dy} \mathcal{K} = y^2 \mathcal{K} - y + y \mathcal{K}$$

$$\int \frac{1}{\sqrt{1-y^2}} \mathcal{K} = \frac{y}{\mathcal{K}}$$

$$\int \frac{y}{y^2} \mathcal{K} = -\frac{y}{y} - \frac{1+\sqrt{1-y^2}}{y} \mathcal{K}$$

$$\int \frac{y^y \mathcal{K}}{\sqrt{1-y^2}} = y^y \mathcal{K} \sqrt{1-y^2} - y$$

$$\int \sqrt{1-y^2} \mathcal{K} = \frac{1}{2} y \sqrt{1-y^2} \mathcal{K} + \frac{1}{4} y \mathcal{K}^2 - \frac{1}{4} y^2$$

$$\int y^y \mathcal{K} = \frac{1}{2} y^2 \mathcal{K} - \frac{1}{4} y \sqrt{1-y^2} + \frac{1}{4} y^y \mathcal{K}$$

$$\int \frac{y}{dy} \mathcal{K}^3$$

$$\int \mathcal{K} y = y^y \mathcal{K} + \frac{1}{2} 1+y^2 \mathcal{K}$$

$$\int \frac{\sqrt{y}}{dy} \mathcal{K}$$

$$\int_{dy} y^y \mathcal{K}^2$$

$$\int_{dy} \frac{y^y \mathcal{K}}{\sqrt{y^2 + 1}}$$

$$2 \int_{dx} x^x \mathcal{K} = x^2 x \mathcal{K} - x + x \mathcal{K}$$

$$\int_{dx} (x + 5)^x \mathcal{K} = \left(\frac{1}{2} x^2 + 5x + \frac{1}{2} \right) x \mathcal{K} - \frac{1}{2} x - \frac{5}{2} x^{x^2 + 1} \mathcal{K}$$

$$\int_{dx} x^{2x} \mathcal{K} = \frac{1}{3} x^3 x \mathcal{K} - \frac{1}{12} x^2 + \frac{1}{48} x^{1 + 4x^2} \mathcal{K}$$

$$\int_{dx}^{\infty} x \mathcal{K} = \infty \text{ increasing}$$