$x^{(k+1)} =$
$Bx^{(k)}+$
c
$\|B\|\beta <$
1
$\|x^{(k)}-$
$x^{(k-1)}\| <$
$\epsilon(1-$
$\beta)/\beta$
k
$\|x-$
$x^{(k)}\|\epsilon$
x
$\|x^{(k)}-$
$x^{(k-1)}\| =$
$\|Bx^{(k-1)}+$
$c-$
$Bx^{(k-2)}-$
$c\| =$
$\|Bx^{(k-1)}-$
$Bx^{(k-2)}\|$
$\|B\|\|x^{(k-1)}-$
$x^{(k-2)}\|\beta\|x^{(k-1)}-$
$x^{(k-2)}\|.$
$\|x-$
$x^{(k)}\| =$
$\left\|\sum_{i=k+1}^{\infty} x^{(i)}-\right.$
$\left.x^{(i-1)}\right\| \sum_{i=k+1}^{\infty} \|x^{(i)}-$
$x^{(i-1)}\|$
$\sum_{i=1}^{n} \beta^i \|x^{(k+i)}-$
$x^{(k+i-1)}\| \frac{\beta}{1-\beta}.$
$\frac{\epsilon(1-\beta)}{\beta} =$
$\epsilon.$

$$I+A+\frac{A^2}{2!}+\ldots+\frac{A^n}{n!}+\ldots$$

A
e^A
$\lambda_1, \lambda_2, \ldots, \lambda_n$
A
e^A
$e^{\lambda_1}, \ldots, e^{\lambda_n}$
$\|\cdot\|$
$\|A^n\|\|A\|^n$

$$\left\|\sum_{k=0}^{n} \frac{A^k}{k!}\right\| \sum_{k=0}^{n} \|A^k/k!\| \sum_{k=0}^{n} \|A\|^k/k! \to e^{\|A\|}.$$

λ_1
A
λ_1^2
A^2
x_1

$$A^2 x_1 = A(Ax_1) = A(\lambda_1 x_1) = \lambda(Ax_1) = \lambda_1^2 x_1.$$

λ_1^n
A^n
x_1

$$e^A(x_1) = \left(\sum_{k=0}^{\infty} \frac{A^k}{k!}\right)(x_1) = \left(\sum_{k=0}^{\infty} \frac{\lambda_1^k}{k!}\right)(v) = e^{\lambda_1}(v).$$

λ_i
e^{λ_i}

$$x_{n+1} = \frac{x_n(x_n^2+3a)}{3x_n^2+a}, n0$$

$\sqrt{a}$

$$\lim_{n\to\infty} \frac{\sqrt{a}-x_{n+1}}{(\sqrt{a}-x_n)^3}$$