$$\sin(X) = X - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} - \frac{x^{11}}{11!} + \cdots$$

$$= \sum_{k=0}^{\infty} (-1)^k \boxed{\frac{x^{2k+1}}{(2k+1)!}}$$

when the term increase by 1, $\text{term} = \text{term} * (-1) \frac{x^2}{2k \cdot (2k+1)}$

Set $k=1$, $\text{term} = x$ since the first term is X.

And $\text{result} = \text{result} + \text{term}$.

$\text{term} = \text{term} * (-1) \frac{x^2}{2k \cdot (2k+1)}$.

loop ends when the result is acurate enough.

$$\cos(X) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \frac{x^8}{8!} - \frac{x^{10}}{10!} + \cdots$$

$$= \sum_{k=0}^{\infty} (-1)^k \boxed{\frac{x^{2k}}{(2k)!}}$$

when the term increase by 1, $\text{term} = \text{term} * (-1) \frac{x^2}{2k \cdot (2k-1)}$

Set $k=1$, $\text{term} = 1$ since the first term is X.

And $\text{result} = \text{result} + \text{term}$.

$\text{term} = \text{term} * (-1) \frac{x^2}{2k \cdot (2k-1)}$.

loop ends when the result is acurate enough.

$$\tan(X) = \frac{\sin(x)}{\cos(x)}$$

if $\cos(x)$ is zero, $\tan(x)$ = undefine.

$$\operatorname{Exp}(X) = \sum_{k=0}^{\infty} \boxed{\frac{x^k}{k!}} = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots$$

term = 1 , k = 1, result = 0.

↑

for the first term.

then result = result + term

term = term * $\frac{x}{k}$

k = k + 1

in a loop, ends when the kth term is small enough.

$\log_e(X)$: To solve $\ln(x)$,

let $y = \ln(x)$, then $e^y = e^{(\ln(x))}$ and get $e^y = X$.

So $f(x) = |x - e^y|$ ← make this close to zero

Since the equation for $\log(x)$: $X_{k+1} = X_k - \dfrac{f(X_k)}{f'(X_k)}$,

We can infer that $\boxed{y_{k+1} = y_k - \dfrac{x - e^y}{-e^y} \leftarrow f'(x-e^y) = -e^y}$

Set $y=1$, $exp = e^y$

$$\left.\begin{array}{l} y = y + \dfrac{x - exp}{exp} \\ exp = e^y \end{array}\right\}$$ in a loop, ends when $\dfrac{|x-exp|}{exp} \approx 0$, that is, $|x-exp| \approx 0$.