

P9

What is the general form for

$f(x) = e^x$   
centered at  $c=0$ ?

$$f(x) = e^x$$

$$= 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots$$

$$= \sum_{n=0}^{\infty} \frac{x^n}{n!}$$

What is the general form for  $f(x) = \ln(1+x)$

centered at  $c=0$ ?

P10

$$f(x) = \ln(1+x)$$

$$= x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n x^{n+1}}{n+1}$$

What is the general form

for  $f(x) = \sin x$   
centered at  $c=0$ ?

P11

$$f(x) = \sin x$$

$$= x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

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

What is the  
general form  
for  $f(x) = \cos x$   
centered at  $c=0$ ?

P12

$$\begin{aligned} f(x) &= \cos x \\ &= 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots \\ &= \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{(2n)!} \end{aligned}$$

What is the  
general form  
for  $f(x) = \tan^{-1}(x)$   
centered at  
 $c=0$ ?

P13

$$\begin{aligned} f(x) &= \tan^{-1}(x) \\ &= x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \frac{x^9}{9} - \frac{x^{11}}{11} + \dots \\ &= \sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{2n+1} \end{aligned}$$