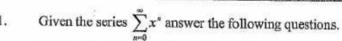
## CALCULUS: Graphical, Numerical, Algebraic by Finney, Demana, Watts and Kennedy Chapter 9: MaClaurin Series

What you'll Learn About How to write terms given a power series Identifying important types of power series



a. List the first 6 terms of the series and the general term 
$$\sum_{n=1}^{\infty} x^n = x^n + x^n$$

$$\sum_{n=0}^{\infty} x^n = \frac{x^0 + x^1 + x^2 + x^3 + x^4 + x^5}{x^5 + x^4 + x^5}$$

b. Determine the function (sum) of the series 
$$(\underline{f(x)} = )$$

$$\int_{-\infty}^{\infty} (x) = \frac{1}{1-x}$$

$$f(x) = \frac{1-x}{1}$$

Substitute  $x^3$  for x in the series you found in part a then simplify.  $1 + x^3 + x^6 + x^9 + x^{12} + x^{15}$ 

2. Given the series 
$$\sum_{n=0}^{\infty} (-1)^n (x)^n$$
 answer the following questions.

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a. List the first 6 terms of the series and the general term
$$\sum_{n=0}^{\infty} (-1)^n (x)^n = \frac{1-x^2+x^2-x^3+x^4-x^5}{1-x^5}$$

Determine the function (sum) of the series (f(x) = )

$$f(x) = \frac{1}{1+x}$$

Substitute x4 for x in the series you found in part a then simplify.

$$1 - x^{1} + x^{8} - x^{12} + x^{16} - x^{20}$$

$$(-1)^{0} \frac{x^{2\omega}}{(z(\omega))!}$$
 $(-1)^{1} \cdot \frac{1}{1}$ 
 $(-1)^{1} \cdot \frac{x^{(2)(1)}}{(z \cdot 1)!}$ 
 $(-1)^{1} \cdot \frac{x^{2}}{2}$ 

3. Given the series 
$$\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!}$$
 answer the following questions.

a. List the first 6 terms of the series and the general term
$$\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!} = 1 - \frac{x^2}{2} + \frac{x^4}{24} - \frac{x^6}{6!} + \frac{x^8}{8!} - \frac{x^{10}}{10!}$$

- Enter the first 6 terms into  $y_1$  of your calculator. Use  $X[-\pi_2\pi]_1$  and Y[-1,1] as your
- What function does it look like the series represents? That function is the sum of this series.
- What would happen to the graphs if the first 10 terms of the series are entered into
- Substitute x3 for x in the series you found in part a then simplify.
- Given the series  $\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!}$  answer the following questions.
- List the first 6 terms of the series and the general term  $(2n+1)! = \left( \frac{x^{2n+1}}{(2n+1)!} \right) + \frac{x^{2n+1}}{2!} + \frac{x$
- Enter the first 6 terms into  $y_1$  of your calculator. Use  $X[-\pi,\pi]_1$  and Y[-1,1] as your window.
- What function does it look like the series represents? That function is the sum of
- What would happen to the graphs if the first 10 terms of the series are entered into d. y1.
- Substitute x4 for x in the series you found in part a then simplify.