Calculus 2 - Unit 10 Part 2 REVIEW

Find the Maclaurin series for the given function (use the elementary forms table):

1) $g(x)=\frac{1}{x^5}$

2) $g(x)=\sin\left(2-x^3\right)$

3) $g(x)=\frac{1}{3+x^2}$

Writing first 5 terms of a power expansion for the given function (use the elementary forms table):

4) $f(x)=\cos\left(3x^5\right)$

5) $f(x)=\sin(4x-3)$

Find the specified Maclaurin or Taylor polynomial (for these you must use the definitions):

6) Find the $n = 5$ Maclaurin polynomial for the function $f(x)=\sin(3x)$

7) Find the $n = 4$ Taylor polynomial centered at c = 2 for the function $f(x)=\ln(x)$

8) Find the $n = 4$ Maclaurin polynomial for the function $f(x)=xe^x$

9) Find the $n = 4$ Taylor polynomial centered at c = 9 for the function $f(x)=\sqrt{x}$

10) Find the $n = 5$ Maclaurin polynomial for the function $f(x)=e^{3x}$

11) Determine the degree of the Maclaurin polynomial centered at 0 required to approximate $f(0.4)$ for the function $f(x)=\sin(x)$ for the error to be less than 0.0002.

12) Determine the degree of the Maclaurin polynomial centered at 1 required to approximate $f(1.4)$ for the function $f(x)=\ln(x)$ for the error to be less than 0.0002.

13) Determine the degree of the Maclaurin polynomial centered at 0 required to approximate $f(0.7)$ for the function $f(x)=e^x$ for the error to be less than 0.0004.

14) Find the interval of convergence of the series $\sum_{n=1}^{\infty}\frac{x^{2n}}{(2n)!}$ (consider the endpoints).

15) Find the interval of convergence of the series $\sum_{n=1}^{\infty}(-1)^{n+1}\frac{(x-4)^n}{n9^n}$ (consider the endpoints).

16) Find the interval of convergence of the series $\sum_{n=1}^{\infty}(-1)^{n+1}\frac{(x-1)^{n+1}}{n+1}$ (consider the endpoints).

17) If $f(x)=\sum_{n=1}^{\infty}\frac{x^{2n}}{2n+1}$ find the interval of convergence for (a) $f(x)$ (b) $f'(x)$ (c) $\int f(x)\,dx$