Math 2320 - Quiz 6

Name:_____

1. $\sum_{k=1}^{\infty} \frac{2}{n^3}$
2. $\sum_{k=1}^{\infty} \frac{2}{n^3+1}$
3. $\sum_{k=11}^{\infty} \frac{2}{n^3-1}$
4. $\sum_{k=11}^{\infty} \sqrt{\frac{2n+1}{n^4+1}}$
5. $\sum_{k=1}^{\infty} \frac{n^3}{3^n}$
6. $\sum_{k=1}^{\infty} \frac{3^n}{n!}$
7. $\sum_{k=1}^{\infty} \frac{n!}{n^n}$
8. $\sum_{k=1}^{\infty} \frac{e^2}{n^2}$
9. $\sum_{k=1}^{\infty} \frac{(n!)^2}{(2n)!}$
10. $\sum_{k=17}^{\infty} \left[\frac{n^3+1}{2n^3+n+1}\right]^n$
11. $\sum_{k=17}^{\infty} \left[1-\frac{1}{n^2}\right]^{n^2}$
12. $\sum_{k=17}^{\infty} \left[1-\frac{1}{n}\right]^{n^2}$

13. $\sum_{k=17}^{\infty} \frac{n^3+1}{2n^3+n+1}(-1)^n$

14. $\sum_{k=17}^{\infty} \frac{n^2+1}{2n^3+n+1}(-1)^n$

15. $\sum_{k=1}^{\infty} \frac{\ln(n)+1}{n^3+1}(-1)^n$

16. $\sum_{k=1}^{\infty} \frac{2^n}{n^2+1}x^n$ Find the interval and radius of convergence.

17. $\sum_{k=1}^{\infty} \frac{3n+1}{2^2}(x+1)^n$ Find the interval and radius of convergence.

18. $\sum_{k=1}^{\infty} \frac{7}{n!}(x-2)^n$ Find the interval and radius of convergence.

19. Find the Taylor series (by the definition)

    (a) $f(x) = \sin(x)$ at $a = 0$

    (b) $f(x) = e^{2x}$ at $a = 1$

20. Find the Taylor series (at $a = 0$) for the following functions using other known series

    (a) $f(x) = \tan^{-1}(x)$

    (b) $f(x) = \frac{x^2}{1-x^2}$