MATH 182 (041) CALCULUS II WORKSHEET IV

Solve the following:

1. Consider $\Phi = \sum_{n=1}^{\infty}\left(\frac{3(n+1)}{(n^3+n+5)}\right)$ Determine if Φ converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

2. Consider $\{f_n\}_{n=1}^{\infty}$ ∋ $f_n = \frac{2}{\sqrt{n}(n^{1/2}+7)}$ Show $\{f_n\}_{n=1}^{\infty}$ converges or diverges

3 Consider $\Psi = \sum_{n=1}^{\infty} f_n$ ∋ $f_n = \frac{2}{\sqrt{n}(n^{1/2}+7)}$. Determine if Ψ converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

4. Consider $\Gamma = \sum_{n=1}^{\infty} g_n$ ∋ $g_n = \frac{7}{(n+1)(n+3)}$ Show by a *Direct Comparison Test* that $\sum_{n=1}^{\infty} g_n$ converges.

5. Consider $\Gamma = \sum_{n=1}^{\infty} g_n$ ∋ $g_n = \frac{7}{(n+1)(n+3)}$ Show by another method other than the *Direct Comparison Test* that $\sum_{n=1}^{\infty} g_n$ converges.

6. Consider $\Gamma_2 = \sum_{n=2}^{\infty}\frac{(n-1)!}{(n+1)!}$ Determine if Γ_2 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

7. Consider $\Gamma_3 = \sum_{n=1}^{\infty}\frac{\pi^n}{(n+1)^n}$ Determine if Γ_3 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

8. Consider $\Gamma_4 = \sum_{n=1}^{\infty}\frac{n^4+1}{n^4-1}$ Determine if Γ_4 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

9. Consider $\Gamma_5 = \sum_{n=1}^{\infty} \frac{3^n + 2}{2^n + 3}$ Determine if Γ_5 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

10. Consider $\Gamma_6 = \sum_{n=1}^{\infty} \frac{n^2 + 1}{n^4 - 1}$ Determine if Γ_6 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

11. Consider $\Gamma_7 = \sum_{k=1}^{\infty} \frac{9}{10^k}$ Determine if Γ_7 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

12. Consider $\Gamma_8 = \sum_{k=1}^{\infty} \frac{7k}{4k^2 + 5}$ Determine if Γ_8 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

13. Consider $\Gamma_9 = \sum_{k=1}^{\infty} \frac{5k}{8k^2 + 7}$ Determine if Γ_9 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

13. Consider $\Delta_1 = \sum_{k=1}^{\infty} \frac{7}{\sqrt[3]{k^4}}$ Determine if Δ_1 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).

14. Consider $\Delta_2 = \sum_{k=1}^{\infty} \frac{3}{\sqrt[7]{k^4}}$ Determine if Δ_2 converges or diverges and state the method used to determine such. If it converges find what the sum is (if such is possible (you used the telescoping series method or geometric series method)).