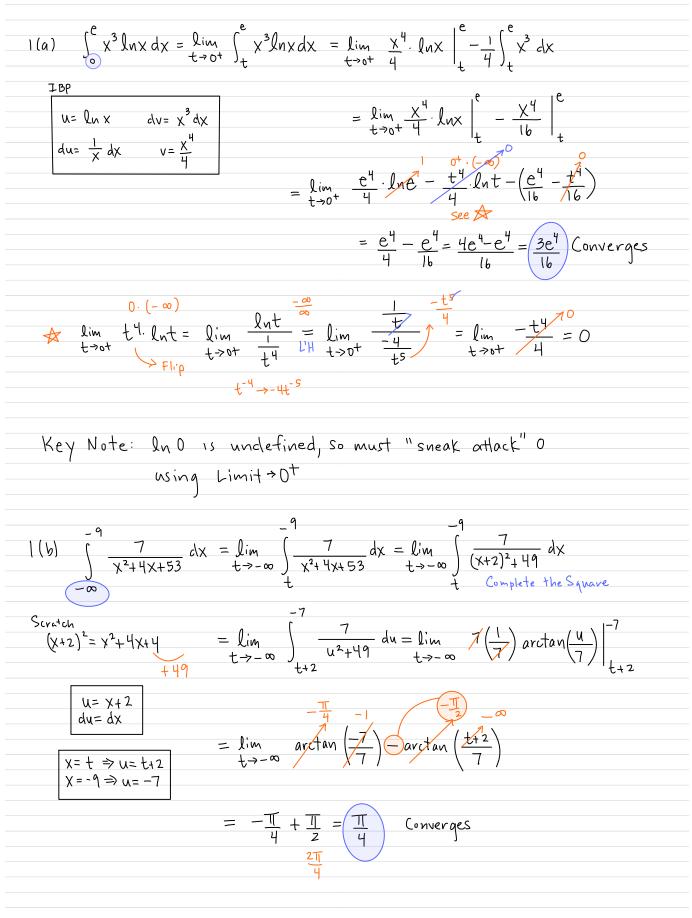
Math 121 Exam 2 Fall 2024 Answer Key



$$1(c) \int_{-5}^{-1} \frac{7-x}{x^2+4x-5} dx = \int_{-5}^{-4} \frac{7-x}{(x-1)(x+5)} dx = \lim_{t \to -5^+} \int_{-\frac{1}{t}}^{-\frac{1}{t}} \frac{7-x}{(x-1)(x+5)} dx$$

$$PED = \lim_{t \to -5^+} \int_{-\frac{1}{t}}^{-\frac{1}{t}} \frac{1}{x-1} - \frac{2}{x+5} dx$$

$$\frac{PED}{(x-1)(x+3)} = \frac{A}{x+1} + \frac{B}{x+5} (x-0)(x+5) = \lim_{t \to -5^+} \int_{-\frac{1}{t}}^{1} \frac{1}{x-1} - \frac{2}{x+5} dx$$

$$\frac{7-x}{(x-1)(x+3)} = \frac{A}{x+5} + \frac{B}{x+5} = \lim_{t \to -5^+} \int_{-\frac{1}{t}}^{1} \frac{1}{x-1} - \frac{2}{x+5} dx$$

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$$\frac{2}{x-\frac{2}{x-\frac{1}{t}}} \frac{1}{x^{1}} + \frac{1}{x-1} - \frac{2}{x+5} dx$$

$$\frac{2}{x-\frac{2}{x-\frac{1}{t}}} \frac{1}{x^{1}} + \frac{1}{x-\frac{1}{t}} - \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{2}{x-\frac{2}{x-\frac{1}{t}}} \frac{1}{x+\frac{1}{t}} - \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x-\frac{1}{t}} \frac{1}{x+\frac{1}{t}} - \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} - \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} - \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} dx$$

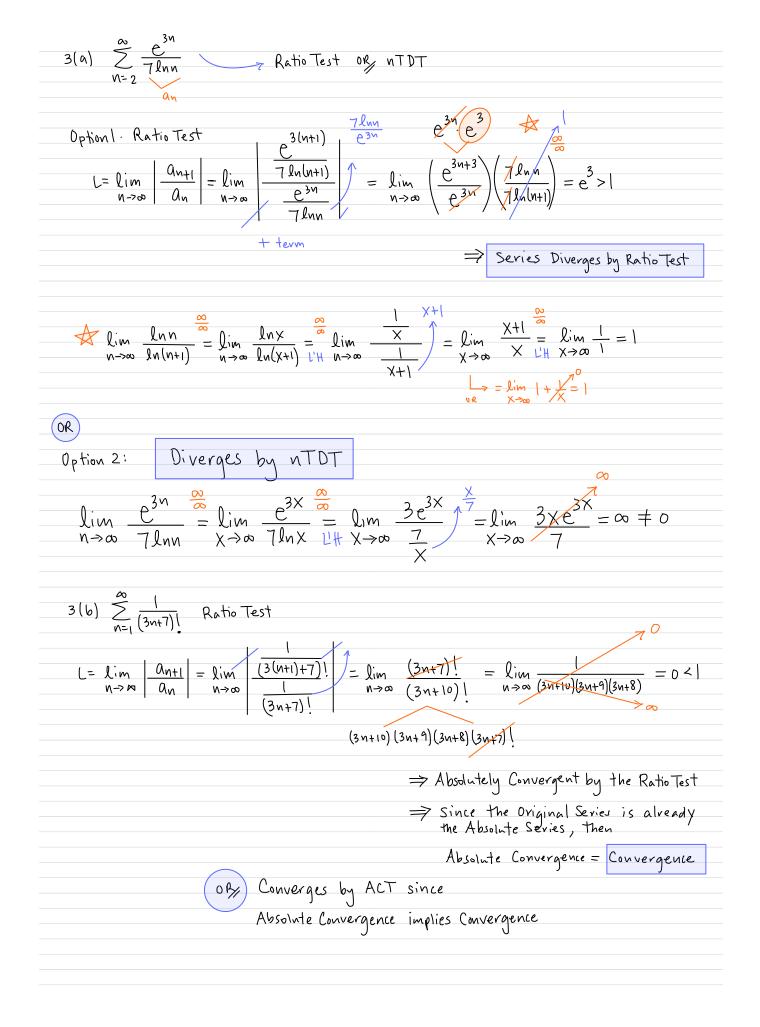
$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} dx$$

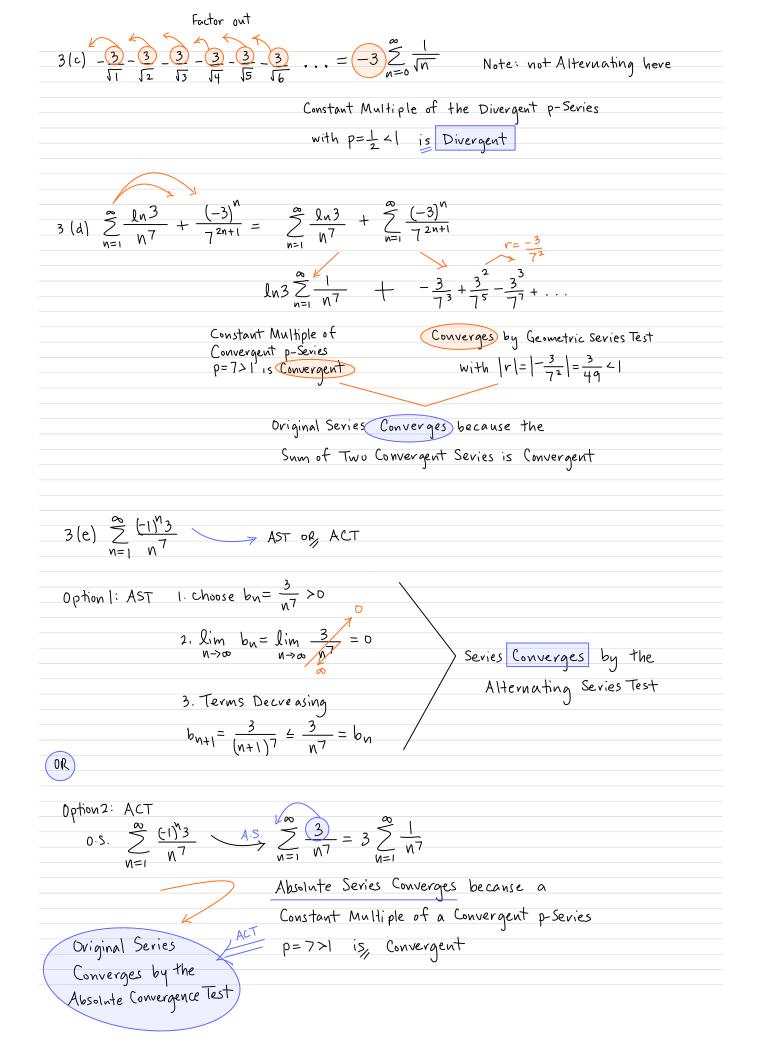
$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} dx$$

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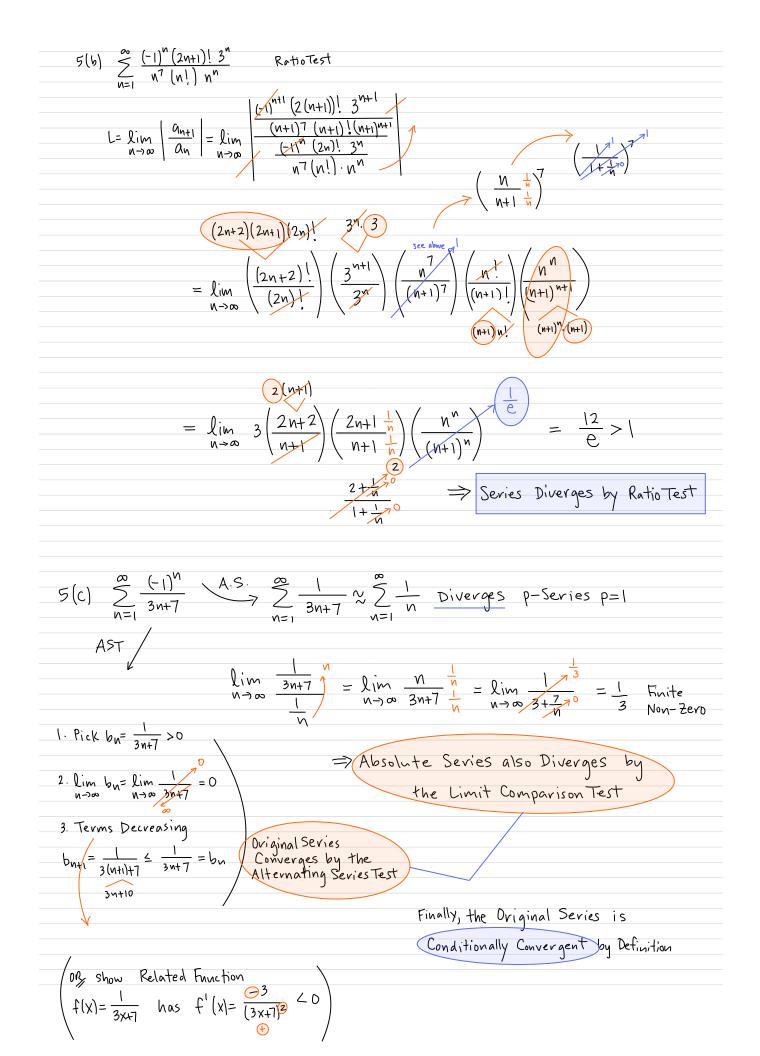
$$\frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} \frac{1}{x+\frac{1}{t}} dx$$

$$\frac{1}{x+\frac{1}{t}}$$





$$3[f] \sum_{n=1}^{\infty} \left[\left(-\frac{7}{n^{2}}\right)^{n^{2}} \underbrace{\text{Diverges}}_{X \to \infty} \left(1 - \frac{7}{x^{2}}\right)^{n^{2}} = \underbrace{\text{divers}}_{X \to \infty} \left[\left(1 - \frac{7}{x^{2}}\right)^{n^{2}} = \underbrace{\text{divers}}_{X \to \infty} \left(1 - \frac{7}{x^{2}}\right)^{n^{2}} = \underbrace{\text{div$$



Bonns (continued) ⇒ the Sequence terms must Approach O as n→∞ because otherwise if lim $a_n \neq 0$, then the Series would Diverge by NTDT which would contradict what we proved above... the Series Converges. That is, since $\sum_{n=1}^{\infty} \frac{\ln[\ln n] 5^n (n!)^3 (2n)!}{n^{2n} (3n)!}$ Converges then $\lim_{n\to\infty} \frac{(\ln(\ln n)) 5^n (n!)^3 (2n)!}{N^{2n} (3n)!} = 0 \Rightarrow Sequence Converges.$