Name:
ID:

Prob. 1
Calculate the area between $y = 2x^5 + 3$ and $y = 32x + 3$. 
Prob. 2
Compute $\int \cos^4 x \sqrt{\csc x} \, dx$
Prob. 3
Compute \( \int \frac{dx}{x^2 \sqrt{x^2 + 5}} \)
Prob. 4
Calculate the length of the arc of the curve $y = \ln x$ between $x = 1$ and $x = \sqrt{3}$. 
Prob. 5
Find the sum of $\sum_{n=1}^{\infty} \frac{4}{(4n-3)(4n+1)}$
Prob. 6
Determine whether the following series converge or diverge

a) \[ \sum_{n=2}^{\infty} \frac{1 + n \ln n}{n^2 + 5} \]

b) \[ \sum_{n=1}^{\infty} \frac{(2n)!}{n!n!} \]
Prob. 7
Does the series converge absolutely, converge conditionally or diverge?

\[ \sum_{n=1}^{+\infty} (-1)^n (\sqrt{n + 1} - \sqrt{n}) \]
Prob. 8

Find the radius of convergence, for what values of $x$ does the series converge absolutely, converge conditionally?

$$
\sum_{n=0}^{+\infty} (-1)^{n+1} \frac{(x + 2)^n}{n2^n}
$$