

6. [4 points] For each of the following questions, circle the answer which correctly completes the statement. You **do not** need to show your work.

a. [2 points] The integral $\int_1^\infty \frac{\ln x}{x^{3/2}} dx$

converges

diverges

b. [2 points] The integral $\int_0^1 \frac{x}{x^2 + x^{3/2}} dx$

converges

diverges

7. [6 points] The power series

$$\sum_{n=1}^{\infty} \frac{(-1)^n (x-1)^n}{5^n n}$$

has a radius of convergence of 5. For each of the endpoints of the interval of convergence, fill in the first two blanks with the endpoint and the series at that endpoint (in sigma notation or by writing out the first 4 terms), and then indicate whether the series converges at that endpoint in the final blank. You **do not** need to show your work.

At the endpoint $x =$ _____, the series is _____

and that series _____.

At the endpoint $x =$ _____, the series is _____

and that series _____.