

6. [15 points] For each of the following questions, fill in the blank with the letter corresponding to the answer from the bottom of the page that correctly completes the sentence. No credit will be given for unclear answers. You do not need to show your work.

a. [3 points] The limit, $\lim_{x \rightarrow \infty} \left(\frac{x+2}{x} \right)^{x/2}, \dots$

b. [3 points] The value of the integral $\int_{-1}^1 \frac{e}{x^{1/3}} dx \dots$

c. [3 points] The value of the integral $\int_{-1}^2 \frac{8e}{x^3} dx \dots$

d. [3 points] The value of A for which the differential equation $y'' = Ay$ is satisfied by the function $f(t) = e^{et} \dots$

e. [3 points] The length of the polar curve $r = \frac{4e}{\pi} \cos(\theta)$ between $\theta = -\pi/4$ and $\theta = \pi/4 \dots$

(A)...is $e^{1/2}$.

(F)...is 1.

(B)...is e .

(G)...is 0.

(C)...is e^2 .

(H)...is 2.

(D) ...is $2e$.

(I)...does not exist.

(E)...is $3e$.

(J)...diverges.