

LAST NAME:

FIRST NAME:

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**MATH 65B - Spring 2018**

Groupwork 4: February 8, 2018

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1. Compute the following limits.

(a)  $\lim_{x \rightarrow \infty} x^{\frac{1}{x}}$

(b)  $\lim_{x \rightarrow \infty} x \sin\left(\frac{\pi}{x}\right)$

(c)  $\lim_{x \rightarrow \infty} x^5 e^{-x^3}$

(d)  $\lim_{x \rightarrow 0^+} \frac{x^2}{x^5}$

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**Please, show all work.**

2. Determine if the the integral is convergent or divergent. If it is convergent, compute the integral.

$$\int_0^{\infty} x e^{-5x} dx$$

3. Determine if the the integral is convergent or divergent. If it is convergent, compute the integral.

$$\int_{-\infty}^0 \frac{x}{1+x^2} dx$$

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Please, show all work.

4. Determine if the the integral is convergent or divergent.

$$\int_0^{\infty} \frac{\cos^2(x)}{x^2 + 1} dx$$

5. Determine if the the integral is convergent or divergent. If it is convergent, compute the integral.

$$\int_0^2 x^2 \ln(x) dx$$

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Please, show all work.