

Do the following integrals converge or diverge? You will work in groups of 3 or 4 together on these. As usual, please note any substitutions. We will work on this for 15 minutes and then come together as a class. Please do NOT use your book.

1. For each person in your group, designate one of the following colors: Red, Blue, Black, Mystery. If you have three people, Mystery and Blue are the same.

Next to the color, write your name in that color:

Red _____

Blue _____

Black _____

Mystery _____

Hold onto these pens; you'll need them for the rest of the activity.

2. $\int_4^{\infty} \frac{1}{\sqrt{x^2 - 9}} dx$

Discuss each of these questions as a group.

(a) What type of Improper Integral is this and why? RED should write this answer in RED.

(b) Write the corresponding limit(s). BLUE should write this answer in BLUE.

(c) What method(s) will you use to solve this integral? BLACK should write this answer in BLACK.

(d) Solve the integral(s).

(e) Is the improper integral convergent or divergent? MYSTERY should write this in MYSTERY.

3. $\int_0^5 \frac{x}{x-3} dx$

Discuss each of these questions as a group.

(a) What type of Improper Integral is this and why? MYSTERY should write this in MYSTERY.

(b) Write the corresponding limit(s). RED should write this answer in RED.

(c) What method(s) will you use to solve this integral? BLUE should write this answer in BLUE.

(d) Solve the integral(s).

(e) Is the improper integral convergent or divergent? BLACK should write this in BLACK.

4. $\int_{-\infty}^0 xe^x dx$

Discuss each of these questions as a group.

(a) What type of Improper Integral is this and why? BLUE should write this answer in BLUE

(b) Write the corresponding limit(s). BLACK should write this in BLACK.

(c) What method(s) will you use to solve this integral? MYSTERY should write this in MYSTERY.

(d) Solve the integral(s).

(e) Is the improper integral convergent or divergent? RED should write this answer in RED.