

Name: .....

MATH-165 Puzzle Collection 4

23 12:10pm-Wumaier 24 12:10pm-Njus

2016 Nov 18 12:10pm-1:00pm

25 1:10pm-Wumaier 26 1:10pm-Njus

27 2:10pm-Wumaier 28 2:10pm-Njus

This puzzle collection is closed book and closed notes. NO calculators are allowed for these puzzles. For full credit show all of your work (legibly!). Every puzzle is worth 10 points (a total of 50 points).

If you do not mark your section correctly, you will get -2 points.

Good luck!

Puzzle 1	Puzzle 2	Puzzle 3	Puzzle 4	Puzzle 5
/10	/10	/10	/10	/10

Total score
/50

DOES YOUR MATH HOMEWORK LOOK LIKE THIS?

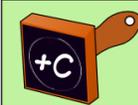
7.  $\int x^3 dx = \frac{x^4}{4} + C$  (1/2)  
Don't forget the C!

DO YOU KEEP FORGETTING THE PLUS C?



YES!!

WELL, STRESS NO MORE!  
 INTRODUCING THE **+C STAMP!**



EASILY ATTACHES TO ANY KEYCHAIN OR NECKLACE!

**AWESOME!**

RED INK PADS AVAILABLE TO TEACHERS FOR GRADING!

STUDENTS, NEVER LOSE MARKS AGAIN!  
 SIMPLY CARRY IT WHEREVER YOU GO AND ADD C TO EVERYTHING!

DOING AN INDEFINITE INTEGRAL QUESTION?  
 NO PROBLEM! ADD C TO YOUR ANSWER IN AN INSTANT!

DOING A DEFINITE INTEGRAL QUESTION?  
 BETTER ADD C JUST TO BE SAFE!\*

\*NOT RECOMMENDED

FILLING IN THE TIP LINE AT A RESTAURANT?  
 WHY NOT GIVE THAT WAITER OR WAITRESS AN EXTRA C?\*\*\*

\*\*\*HIGHLY RECOMMENDED

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1: Use the Fundamental Theorem of Calculus to compute  $C$  and  $f(4)$ , where

$$\int_0^x f(t) dt = x \cos(\pi x) + 1 + Ce^x.$$

$$f(4) = \underline{\hspace{2cm}} \quad C = \underline{\hspace{2cm}}$$

2: Evaluate

$$\int_1^{e^5} \frac{2}{t(4 + \ln t)^{3/2}} dt$$

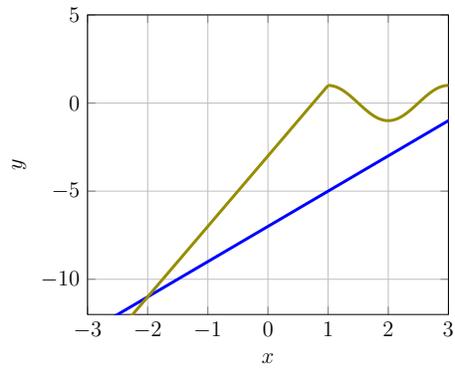
Your answer must be in simplest form.

$$\int_1^{e^5} \frac{2}{t(4 + \ln t)^{3/2}} dt = \underline{\hspace{2cm}}$$

**3:** A function  $g$  is defined by

$$g(x) = \begin{cases} 4x - 3 & x < 1 \\ -\cos(\pi x) & x \geq 1 \end{cases}$$

and  $f$  is defined as  $f(x) = 2x - 7$ . Compute the area between the curves  $f$  and  $g$  for  $-2 \leq x \leq 2$ .



4: Find  $y$  given  $y' = (y^2 + 1) \cdot \cos(x)$  and  $y(\pi/2) = 0$ .

5: Compute

$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{1}{\arctan x} \right)$$