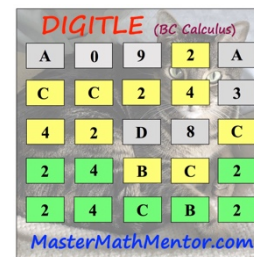


DIGITLE – BC CALCULUS

Puzzle 203 – Partial Fraction Integration



Directions: The first 5 problems have single digit or letter answers. The 6th problem has a 3-digit answer (counting leading zeros if present). You have a choice: solve the easier single-character answer problems or tackle the more difficult 3-digit answer and the multiple choice.

Green: the digit is in the answer and is in the correct spot.

Grey: the digit is not in the answer.

Yellow: the digit is in the answer but is not in the correct spot.

Single Digit Answers:

1) Find $\int_3^4 \frac{12x}{x^2 + 2x - 8} dx$ to the nearest integer . 2) Find $\int_2^3 \frac{2x + 10}{x^2 - 1} dx$ to the nearest integer.

3) $\int \frac{x^2}{x^2 + 3x + 2} dx =$

A. $x + \ln|x + 1| - 4\ln|x + 2| + C$

B. $x - \ln|x + 1| + 4\ln|x + 2| + C$

C. $1 + \ln|x + 1| - 4\ln|x + 2| + C$

D. $1 - \ln|x + 1| - 4\ln|x + 2| + C$

4) Find the area bounded by the curves $y = \frac{8}{16 - x^2}$, $y = 3.5$, $x = 0$ and $x = 1$ to the nearest integer.

5) $\int \frac{2 \cos x}{\sin x (\sin x + 2)} dx =$

A. $\ln \left(\frac{|\sin x|}{|\sin x + 2|} \right) + C$

B. $\ln \left(\frac{|\sin x + 2|}{|\sin x|} \right) + C$

C. $\ln(|\sin x| - |\sin x + 2|) + C$

D. $\ln(|\sin x + 2| - |\sin x|) + C$

Three Digit Answer:

6) Shown is the area bounded by $y = \frac{25}{\sqrt{x^2 + x}}$, the line $x = 1$ and the x -axis. This area is

the base of a 3-D solid whose cross sections perpendicular to the x -axis are squares. Find the volume of this solid to the nearest integer.

