

Good afternoon: warm up in notebooks

$$\int \frac{-15 \csc(3x) \cot(3x)}{5} e^{\csc 3x} dx$$

$$-3 \csc 3x \cot 3x$$

$$5 \int \frac{-3 \csc(3x) \cot(3x)}{5} \cdot e^{\csc 3x} dx$$

$$5 \cdot e^{\csc 3x} + C$$

$$2 \int \frac{4 \sec^2 2x}{2} \cdot \frac{1}{\tan 2x} dx$$

$$2 \int 2 \sec^2 2x \cdot \frac{1}{\tan 2x} dx$$

$$2 \left[\ln |\tan 2x| + C \right]$$

$$\int \frac{4 \sec^2 2x}{\tan 2x} dx$$

Exploring Graphical Relationships

<http://j.mp/calcapplet>

#15: Identify an Antiderivative Function

Try to get 5 in a row right!

#20: Reconstruct F from its First Derivative

Student instructions

1. Visit getafive.com and click on "I'm a student".
2. On the students page, choose "AP Calculus AB".
3. On the AP Calculus AB page, click on the "Enroll now" button.
4. Create an account or log in if you're already signed up.
5. You're now in your personal Study Room.
6. Click on the "Join a Class" tab on the left and enter this code: CFRFU8A

CFRFU8A

If you used GetAFive.com for an AP class last year, you can use your same account!

Lessons you may be interested in:

- Techniques of Antidifferentiation
- Related Rates Part 1
- Related Rates Part 2

(NOTES)

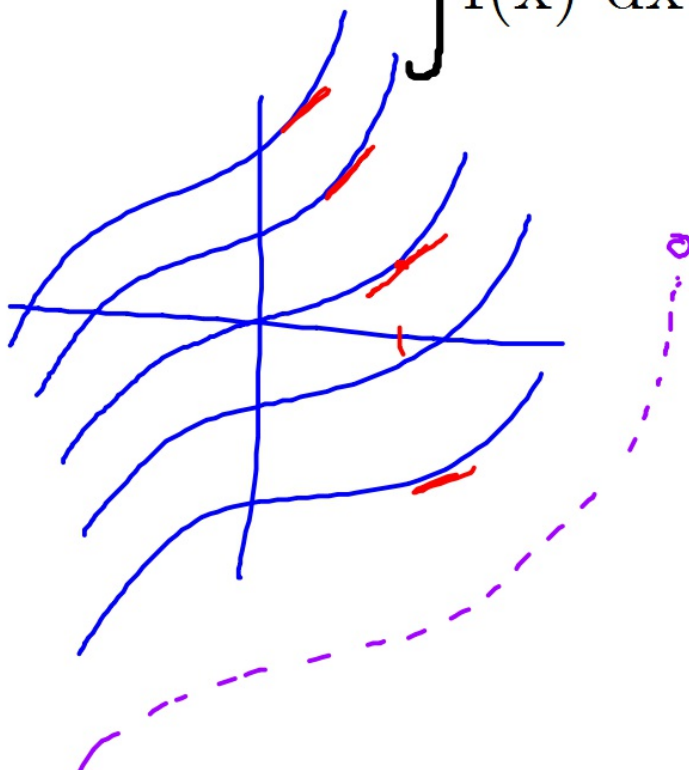
How to find C

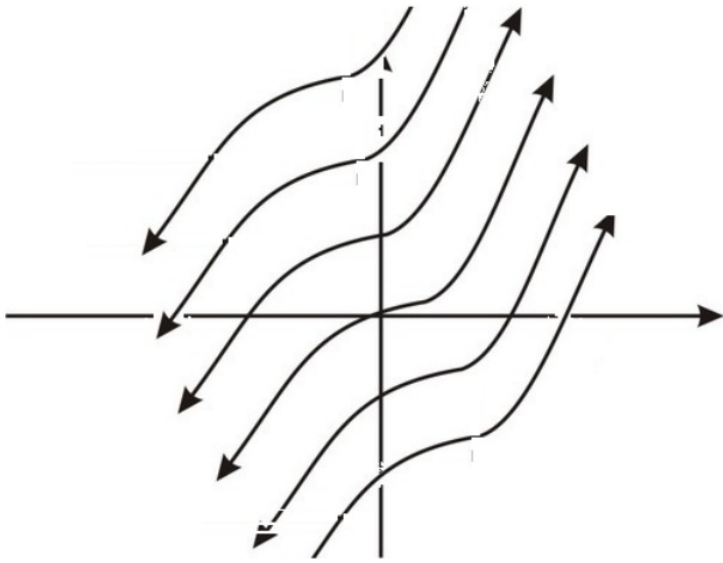
Finding C

What is the solution to

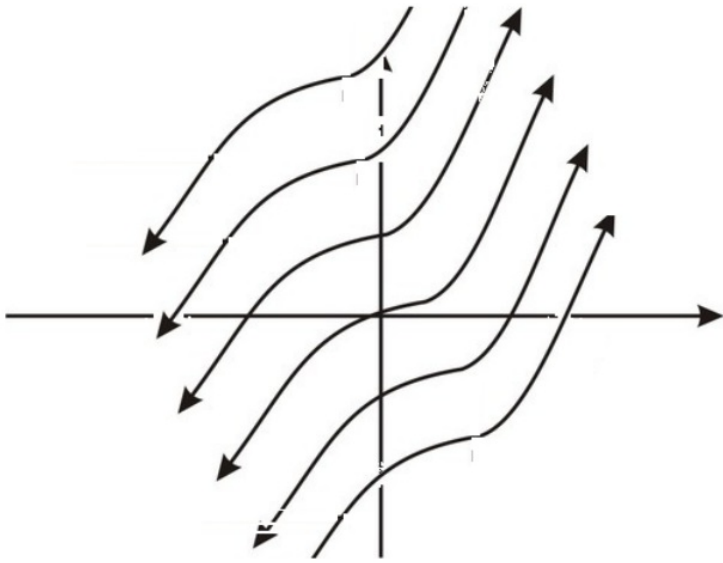
$$\int f(x) dx$$

= a family of functions





Well which one is it??



Well which one is it??

You need a single point...

to let you

find the

"particular"

Solution

from the entire family.

Example:

A car's acceleration after time $t=0$ can be modeled by the linear function $a(t) = 4t+2$ m/s². Find its position function.

$$a(t) = 4t + 2$$
$$\int a(t) = \int 4t + 2$$

$$v(t) = 2t^2 + 2t + C$$

Need Additional info:
 $v(1) = 6$ m/s

$$6 = 2(1)^2 + 2(1) + C \leftarrow (1, 6)$$

$$6 = 2 + 2 + C$$

$$6 = 4 + C \Rightarrow C = 2$$

So,

$$v(t) = 2t^2 + 2t + 2$$

$$\int v(t) = \int 2t^2 + 2t + 2$$

$$x(t) = \frac{2}{3}t^3 + t^2 + 2t + C$$

(Position)

Need more!

$$x(3) = 35 \text{ m}$$
$$(3, 35)$$

$$35 = \frac{2}{3}(3)^3 + 3^2 + 2(3) + C$$

$\frac{2}{3} \cdot 27$

$$35 = 18 + 9 + 6 + C$$

$$35 = 33 + C \Rightarrow C = 2$$

$$x(t) = \frac{2}{3}t^3 + t^2 + 2t + 2$$



Classwork/homework:

Due Weds

- handout choose any 24 (12 on each side)