January 11, 2017

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HW: Note Card is due Friday!

Go over multiple choice problems and Partial Fraction problems.

3)
$$\int \frac{\chi - 1}{\chi(\chi - 2)} d\chi = \frac{1}{2} |n|\chi| + \frac{1}{2} |n|\chi - 2| + C$$

$$(\textcircled{H} - \frac{1}{\sqrt{t}})^{2} = t - 2 + \frac{1}{t}$$

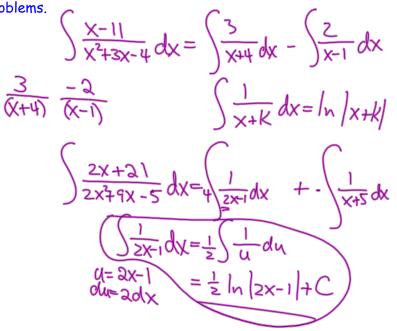
$$(\textcircled{O} \quad \int \frac{dx}{s_{1}w^{2}2x} = \int csc^{2}axdx$$

$$(\textcircled{O} \quad \int e^{20}s_{1}w e^{20}d\theta$$

$$u = e^{20} \quad du = 2c^{20}$$

HW: Note Card is due tomorrow.

Go over multiple choice problems and Partial Fraction problems.



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 $\begin{aligned} & \sum \chi e^{-\chi} d\chi = (e^{-\chi})\chi - -\int e^{-\chi} d\chi \\ & u = \chi \quad dv = e^{-\chi} d\chi \\ & du = 1 d\chi \quad V = -e^{-\chi} \qquad = -\chi e^{-\chi} + \int e^{-\chi} d\chi \\ & = -\chi e^{-\chi} - e^{-\chi} + C \\ & \frac{d}{d\chi} e^{e\chi} = 2e^{2\chi} \\ & (u = -\chi) e^{-\chi} \end{aligned}$ Sezx dx - ezx

Find antiderivatives for ln x and arctan x using integration by parts

$$\frac{\int |n \times d \times = x \ln |x| - \int \frac{1}{x} \cdot x dx}{du = \frac{1}{x} dx \quad v = x} = x \ln |x| - \int 1 dx}{= x \ln |x| - \int 1 dx}$$

$$\int \frac{\int \operatorname{arctan} x \, dx}{\operatorname{u=arctan} x \, dv = dx} = \operatorname{xarctan} x - \int \frac{x}{1+x^2} \, dx$$

$$\int \frac{1}{1+x^2} \, dx = \frac{1}{1+x^2} \, dx$$

$$= \operatorname{xarctan} x - \frac{1}{2} \ln |x+1| + C$$

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GREATEST HITS!

For the Unit 6 test, you must be able to:

A) Solve an indefinite integral/find an antiderivative for any integrand.

1) First consider, can I work backwards? If my integrand is the derivative of some function, then I can easily find the antiderivative. If no, then...

2) Is there a way I can rewrite the integrand OR do something algebraically to make the problem more clear? Then consider...

Is there a composite function in the integrand? Is there a product of a function and a form of its derivative? Then, use u-substitution. Most times, I can just work backwards after this, OR I might need to consider...

4) Is there a product of two separate and distinct types of functions? If yes, then use integration by parts and remember ILATE when choosing a u.

5) Lastly...if after I consider u-substitution, I realize I am working with an integrand that is a proper rational function, with a factorable denominator (linear and non-repeating factors), then use integration by partial fractions.

B) Evaluate a definite integral for any integrand remembering to "translate" the limits of integration when using a u-substitution.

Note: Don't forget that we did a lot of work in Unit 5. recognizing when integrands on a finite interval form known geometric figures. USE AREA WHENEVER YOU CAN to solve a definite integral! While this is not a focus on the assessment for Unit 6, this is important to the larger picture of the work that we do with evaluating integral statements.

How to Choose the Technique of Integration to Use $\int s_{in} x dx = -\cos x + C$

Recognize as a basic rule

Manipulate algebraically: Multiply out, split a fraction, (IE-E)dt divide U-substitution: composition, with derivative of inner function ax Sin(x2)dx Partial Fractions: Linear function over a quadratic function that factors x = 4 dX

Integration by Parts: Product, with at least one part you can integrate easily; Choose u by LIATE xexdx

On worksheet (page from our textbook):

In your group, go through the circled problems and JUST DECIDE WHICH METHOD YOU WOULD USE! 5kip #2

When you finish this, actually integrate the problems listed at the

top Note: You have the answers to all the problems, w/ hints, in your answer packet