Calculus

Date:

Items Needed: .Book, Mathgraphs 43 &45 (slope fields).

Objective: The students will be able learn how to integrate functions using recognition, substitution, and change of variables.

Lesson:

- $\frac{d}{dx}\left[F(g(x))\right] = F'(g(x))g'(x)$ from the definition of antiderivative, we get $\int F'(g(x))g'(x) = F(g(x)) + C$
- You have to first be able to recognize a pattern. Ask yourself the question, "If I take the derivative of what I will get the other part?"
- If the students can't see the pattern just do the u – substitution and go on.
- Look at exploration a-c.
- What generalization can you make? Usually take the derivative of the entity raised to the power.
- Look at d & e.
- Ask yourself what are we missing?
- Put up $\int (x^3+1)^2(3x^2)dx$ and solve. Use u and du if students can't see the relationship.
- Put up $\int 9\cos 9x dx$ and solve.
- What can you do with a constant that is an integral? Pull it out.
- Put up $\int (x^3+1)^2(x^2)dx$ and solve. I'm missing the 3 so I would have to multiply by 1/3.
- Do example 4 and example 5 pointing out how you don't have an x in the derivative so you have to substitute to get one.
- Simply look at example 6.

- Discuss the general power rule for integration and see how it is kind of what we have been using up until this point.

- Integrate example 9 the normal way and look at the u substitution pointing out the change in the interval when using those values.

- Do example 9

- Talk about Integration of even and odd functions. Remind students how to find even functions f(-x)=f(x) and odd functions f(-x)=-f(x)

Assignment: .Have students do 7, 12, 19, 24, 27, 33, 36, 37, 38, 40, 64, 67, 74, 76, 78, 101, 104, p. 341.

Evaluation: (Could be from any one/several of the following)

Responses from classroom questions
Results of classroom sample problems
Homework responses
Check answer with Calculator
End of the section exam

Enrichment: