
MAT 146

In-Class Check II (Integration Methods)

Name _____

10 points

Do Not Use Any Calculating Tools!

Impact on Course Grade: approximately ½%

Score _____

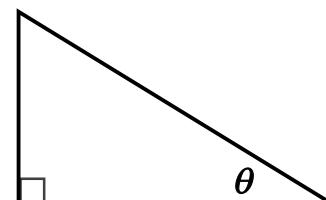
Show appropriate calculus evidence to fully support your responses.

Show exact values unless otherwise requested.

1. Linda was evaluating an integral using a trig substitution. Linda used $x = 2\sin\theta$. Use the reference triangle provided here to complete these two tasks:

(i) **Determine** and **show** all three side lengths in the right triangle, using angle θ as shown. (3 pts)

(ii) State the value of $\sec \theta$. (2 pts)



2. Johnnie stared at this integral on one of last semester's WebAssign tasks: $\int \frac{7x-6}{x^2-x-6} dx$.

(i) He first tried a ***u*-substitution**, with $u = x^2 - x - 6$. What makes u -substitution an ***inefficient*** strategy? Be specific and clear. (2 pts)

(ii) Johnnie then decided to try a **partial fraction decomposition**. Show the **first three steps** he would use to **begin** partial fraction decomposition. (3 pts)

BONUS!

On a recent semester exam, Dianne was asked to evaluate $\int_1^4 \frac{5}{(x-3)^2} dx$. She started to write out a solution, then stopped, and, under her breath, said, "**No way! That's a definite integral we can't even apply our methods to!**" What was she talking about?

- **If she was correct**, what was the **reason** she couldn't apply our methods of integration here?
- **If she was incorrect**, what **could you do** to evaluate this definite integral?