Reading Assignment # 4

Math 9 - Prof. Orellana

Oct. 3, 2007

1. Read the first paragraph of Section 8.3 and describe the motivation for doing trigonometric substitutions.
2. What does the book mean by "inverse substitution"?
3. Why do we restrict θ to the interval $[-\pi/2, \pi/2]$, when we make the inverse substitution $x = a \sin \theta$?
4. What substitution is useful when integrating $\sqrt{a^2 + x^2}$?
5. After reading the first page 503 in your book, how would you summarize the objective of Section 8.3?
6. Read Example 1, after doing the inverse substitution and obtaining the antiderivative as a function of θ, we have to convert it to a function in x, how is this done in this example? What is important to remember?
7. Why didn't we have to convert back to x in Example 2 after we found the antiderivative?
8. What is the objective of Example 4?
9. Why are two solutions given for Example 5? Why do we use trigonometric substitutions more often than hyperbolic identities?
10. What "trick" is Example 6 showing you?
11. What "trick" is Example 7 showing you?
12. Answer the question in the caption of Figure 5?