Sample Exam 1 Solutions - Math 129 - Fall 05 - Kennedy

NOTE: I only give answers here. On the exam be sure to show your work.

1. \( \frac{1}{4}(2 + \sin \theta)^4 + C \) \hspace{1cm} (1)

2. \( \frac{-1}{45}[7 \cos(7x) \sin(2x) - 2 \sin(7x) \cos(2x)] \) \hspace{1cm} (2)

3. \( x \sin^{-1}(x) + \sqrt{1 - x^2} + C \) \hspace{1cm} (3)

4. \( \sin^{-1}\left(\frac{x - \frac{1}{2}}{\frac{2}{2}}\right) + C \) \hspace{1cm} (4)

5. (a) \( \frac{1}{2k} \left(1 - \exp(-kT^2)\right) \) \hspace{1cm} (5)

   (b) \( \frac{1}{2k} \)

6. LEFT=30, RIGHT=31. TRAP is their average which is 30.5.

7. (a) Top choice is the correct one.
   (b) A = 1, B = -1, C = -2.

8. It converges. The easiest way to do this is to use the comparison theorem.
   \( e^{-x}(1 + \cos x) \leq 2e^{-x} \). Since

   \( \int_0^\infty 2e^{-x} \, dx \) \hspace{1cm} (6)

   converges the original integral does too. Note that this solution is a 7.8 method and that section is not on our exam. The other way to do this problem is to use the table to find the antiderivate. Then you can actually compute the value of the integral.

9. A is TRAP, B is LEFT, C is SIMPSON, D is RIGHT.