MATH 152 Assignment 5, Fall 2019.

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Webassign exercises.

9.4 Exercises 3, 6

11.1 Exercises 5, 16, 23, 25, 38, 64, 75.

11.2 Exercises 15, 17, 18, 27, 31

11.3 Exercises 7, 11, 23

11.4 Exercises 7, 9, 17, 19

11.5 Exercises 5, 8, 11, 23

Written exercises.

1 Evaluate $\int \sin x \cos^3 x \, dx$ and $\int \dfrac{\sin x}{\cos^3 x} \, dx$ using a substitution.

2 A population grows according to the logistic growth model $\dfrac{dP}{dt} = 0.02P - 0.0004P^2$.

    (a) What is the carrying capacity M?
    (b) What is the natural growth rate k?
    (c) Given $P(0) = 10$, write down the solution for $P(t)$.
    (d) What is the population after 100 years?
    (e) What will happen to the population in the long term? (f) Sketch a graph of $P(t)$.

3 11.2 Exercises 4 and 45.

4 11.3 Exercises 34 and 37(a)–(c).
   Note formula (3) in exercise 37 is referring to formula $\boxed{3}$ on page 724. See Example 6.

5 Use the integral test to show that $\displaystyle\sum_{n=1}^{\infty} \dfrac{1}{n^2 + 3n + 2}$ is convergent or divergent. You will need
a partial fraction decomposition.

6 11.4 Exercise 4.

7 Test if $\displaystyle\sum_{i=1}^{\infty} \dfrac{1}{n+2}$ converges or diverges using the limit comparison test.

8 11.5 Exercises 31 and 35.

    Class, written exercises 1 and 5 and the Webassign exercises in 11.3 are a mini review of
7.1 integration by parts, 7.2 trigonometric integrals, 7.3 integration by partial fractions and 7.8
improper integrals.