

Math 5B: Problems from Section 6.5, Chapter 7, and Section 8.1

Chapter 6.5: #10, #20

Chapter 7.1 #4, #14(a)

Chapter 7.3 #6

Chapter 8.1: #5, #6, #10, #17

For #17, you should set up the path integral you want to do. Then, you can do the integration with a computer, or to compute it by hand, you'll need to know the following trig identities (the double angle formulas):

$$4 \cos^2 \theta \sin^2 \theta = \sin^2(2\theta) \quad \text{and} \quad \sin^2(2\theta) = \frac{1 - \cos(4\theta)}{2}$$

The final answer is $\frac{3}{8}\pi$.