IMPROPER INTEGRAL EXERCISES

1. Evaluate $\int_1^\infty \frac{1}{x}\,dx$.

2. Evaluate $\int_1^\infty \frac{1}{x^2}\,dx$.

3. Evaluate $\int_1^\infty \frac{1}{x^3}\,dx$.

4. Evaluate $\int_1^\infty \frac{1}{x^4}\,dx$.

5. Evaluate $\int_1^\infty \frac{1}{x^5}\,dx$.

6. Suppose you go to a pharmacy to pick up a prescription and the average waiting time is 5 minutes. It can be shown that the probability that you will have to wait between *a* and *b* minutes is given by the integral $\int_a^b \frac{1}{5}e^{-t/5}\,dt$. What is the probability that you will have to wait from 0 to 10 minutes? Round your answer to two decimal places.

7. Suppose you go to a pharmacy to pick up a prescription and the average waiting time is 5 minutes. It can be shown that the probability that you will have to wait between *a* and *b* minutes is given by the integral $\int_a^b \frac{1}{5}e^{-t/5}\,dt$. What is the probability that you will have to wait more than 10 minutes? Round your answer to two decimal places.