12-7

Practice

Special Sequences and Series

Find each value to four decimal places.

1. $\ln(-5)$ **2.** $\ln(-5.7)$ **3.** $\ln(-1000)$

Use the first five terms of the exponential series and a calculator to approximate each value to the nearest hundredth.

4. $e^{0.5}$ **5.** $e^{1.2}$

6. $e^{2.7}$ **7.** $e^{0.9}$

Use the first five terms of the trigonometric series to approximate the value of each function to four decimal places. Then, compare the approximation to the actual value.

8. $\sin \frac{5\pi}{6}$ **9.** $\cos \frac{3\pi}{4}$

Write each complex number in exponential form.

10. $13\left(\cos \frac{\pi}{3} + \boldsymbol{i} \sin \frac{\pi}{3}\right)$ **11.** $5 + 5\boldsymbol{i}$

12. $1 - \sqrt{3}\boldsymbol{i}$ **13.** $-7 + 7\sqrt{3}\boldsymbol{i}$

14. ***Savings*** Derika deposited \$500 in a savings account with a 4.5% interest rate compounded continuously. (*Hint:* The formula for continuously compounded interest is $A = Pe^{rt}$.)

a. Approximate Derika's savings account balance after 12 years using the first four terms of the exponential series.

b. How long will it take for Derika's deposit to double, provided she does not deposit any additional funds into her account?