

## 7-5

## Standardized Test Prep

## Exponential and Logarithmic Equations

## Multiple Choice

For Exercises 1–5, choose the correct letter.

1. If  $9^x = 243$ , what is the value of  $x$ ?

A 2

B 5

C 2.5

D 10

2. If  $2^{3x+2} = 64$ , what is the value of  $x$ ?

F  $\frac{8}{3}$

G  $\frac{4}{3}$

H 2

I  $\frac{3}{4}$

3. If  $\log(3x + 25) = 2$ , what is the value of  $x$ ?

A 25

B 75

C  $41\frac{2}{3}$

D 100

4. Which best approximates the solution of  $16^{2x} = 124$ ?

F 0.869

G 1.150

H 1.739

I 3.477

5. Which equation represents the solution of  $2^{3x+1} = 7$ ?

A  $x = 3\left(\frac{\log 7}{\log 2} - 1\right)$

C  $x = \frac{1}{3}\left(\frac{\log 2}{\log 7} - 1\right)$

B  $x = \frac{\log 7}{3 \log 2} - 1$

D  $x = \frac{1}{3}\left(\frac{\log 7}{\log 2} - 1\right)$

## Short Response

6. In 2007, the population of Tallahassee, Florida was 168,979. Some researchers believe that the population of Tallahassee will increase at a rate of 1% each year for the 10 years following this.

- If the researchers are correct, how many years will it take for the population of Tallahassee to reach 180,000?
- Explain in words or show your work for how you determined the number of years found in part (a).