Unit 4 Assessment • Modeling and Analyzing Exponential Functions

1. Marco deposited $300 in a bank account after speaking to a bank representative. The representative showed Marco the exponential equation by which the balance of his account will be determined as it accumulates interest over time. The equation is shown below.

$$f(t) = 300 \cdot 1.03^t$$

What does the value 1.03 represent?

A. the initial amount of money deposited in the account

B. the dollar amount that will be added to the account each year

C. the factor by which the amount of money in the account is multiplied each year

D. the exponent to which the amount of money in the account is raised each year

2. Assume $f(x) = g(x)$. Which of the following pairs of functions may be used to represent the equation $3^{x+2} = 7x + 6$?

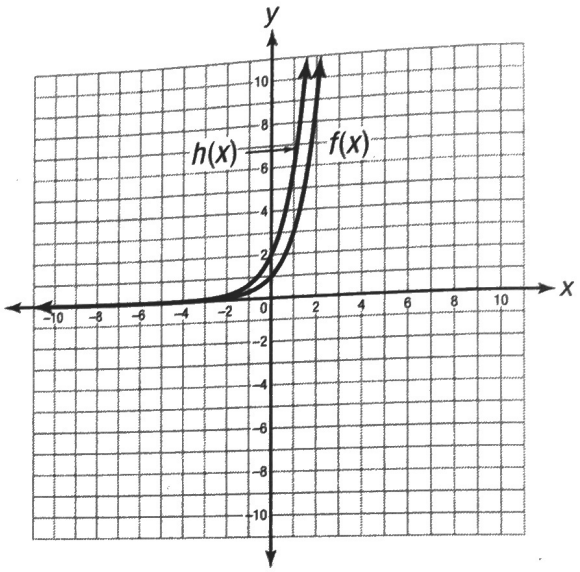
A. $f(x) = x + 2$; $g(x) = 7x + 6$

B. $f(x) = 3^{7x+6}$; $g(x) = 7(3^{x+2}) + 6$

C. $f(x) = 3^{x+2}$; $g(x) = 7x + 6$

D. $f(x) = 7^{x+2}$; $g(x) = 3x + 6$

3. The graph of $f(x) = 3^x$ and its image, $h(x)$, are shown below.



Which equation expresses the value of $h(x)$ in terms of $f(x)$?

A. $h(x) = f(x) + 1$

B. $h(x) = f(x + 2)$

C. $h(x) = f\left(\frac{x}{2}\right)$

D. $h(x) = 2f(x)$

4. Which is equivalent to $x^{\frac{7}{3}}$?

A. $x \cdot \sqrt[3]{x^2}$

B. $x^2 \cdot (\sqrt[3]{x})$

C. $\sqrt[7]{x^3}$

D. $3x \cdot \sqrt[7]{x^2}$