

1. Ronnie opened a bank account that earns 2 percent interest compounded annually. Her initial deposit was \$100, and she uses the expression $\$100(x)^t$ to find the value of the account after t years. What is the value of x in the equation?

A) 0.02

B) 1

C) 1.02

D) 2

$$\sqrt[3]{8x^3}$$

2. If $x < 0$, which of the following is equivalent to the expression above?

A) $-8x$

B) $-2x$

C) $2x$

D) $2x^3$

$$\sqrt{x} = x - 2$$

3. What is the greatest value of x that satisfies the above equation?

4. If $a = \frac{3\sqrt{7}}{4}$ and $4a = \sqrt{3b}$, what is the value of b ?

A) $\frac{4}{3}$

B) 7

C) 21

D) 63

5. If $3y = 2(x - 1)$, what is the value of $\frac{3^{2x}}{27^y}$?

6. If $2x^2 + x^2y - 2xy - 4x - 15y - 30 = 0$, and $x > 5$, what is the value of y ?

A) -5

B) -2

C) 2

D) The value cannot be determined from the information given.

7. What is the value of x if $3\sqrt{x - 20} = 2\sqrt{x}$?

A) 12

B) 24

C) 36

D) 60

8. If $x^3 - 5x^2 - 29x + k$ is evenly divisible by $x - 7$, what is the value of k ?

- A) 7
- B) 15
- C) 35
- D) 105

9. If $a + b = 4$, $a - b = 2$, $x > 1$, and $\frac{x^{a^2}}{x^{b^2}} = x^c$, what is the value of c ?

10. Cecily observed x bacterial specimens in a lab culture on the first day of an experiment. The number of specimens in the lab culture doubled each day, and Cecily observed 2,560 specimens on the fifth day of the experiment. What is the value of x ?

- A) 2
- B) 80
- C) 160
- D) 512