

1. Solve the logarithmic equation.

$$\log_3 x = -\frac{1}{2}$$

A. $x = \frac{\sqrt{11}}{11}$

B. $x = \sqrt{13}$

C. $x = \frac{\sqrt{13}}{13}$

D. $x = \sqrt{5}$

E. $x = \frac{\sqrt{3}}{3}$

F. $x = \sqrt{11}$

G. $x = \frac{\sqrt{5}}{5}$

H. $x = \sqrt{3}$

2. Evaluate the logarithmic expression.

$$\log_2 2^{-1}$$

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

B. 0

C. $-\frac{1}{2}$

D. -1

E. $\frac{1}{4}$

F. 1

G. $-\frac{1}{4}$

H. $-\frac{3}{4}$

3. Evaluate the logarithmic expression.

$$\log_{\frac{8}{3}} \frac{8}{27}$$

- A. 0
- B. 1
- C. 3
- D. 4
- E. -1
- F. 2
- G. -3
- H. -2

4. Evaluate the logarithmic expression.

$$\log_{\frac{1}{2}} \sqrt[4]{1}$$

- A. $-\frac{1}{2}$
- B. $\frac{1}{2}$
- C. $-\frac{1}{4}$
- D. 0
- E. $\frac{3}{4}$
- F. $\frac{1}{4}$
- G. -1
- H. 1

5. Solve the logarithmic equation.

$$\log_3(2x - 8) = 2$$

A. $x = \frac{17}{2}$

B. $x = \frac{79}{10}$

C. $x = \frac{49}{6}$

D. $x = \frac{53}{6}$

E. $x = \frac{77}{10}$

F. $x = \frac{37}{4}$

G. $x = \frac{89}{10}$

H. $x = 8$

6. Convert the exponential equation to logarithmic form.

$$3^0 = 1$$

A. $\log_3 1 = 0$

B. $\log_3 0 = 1$

C. $\log_0 1 = 3$

D. $\log_1 0 = 3$

E. $\log_1 3 = 0$

F. $\log_0 3 = 1$

7. Solve the logarithmic equation.

$$\log_3 x = 2$$

A. $x = 9$

B. $x = \frac{1}{9}$

C. $x = \frac{1}{81}$

D. $x = 81$

E. $x = 64$

F. $x = 4$

G. $x = \frac{1}{4}$

H. $x = \frac{1}{64}$

8. Solve the logarithmic equation.

$$\log_4(5x + 7) = 4$$

A. $x = 49$

B. $x = \frac{244}{5}$

C. $x = \frac{253}{5}$

D. $x = \frac{1011}{20}$

E. $x = \frac{249}{5}$

F. $x = \frac{246}{5}$

G. $x = \frac{737}{15}$

H. $x = \frac{742}{15}$