

Chapter 5 Practice Test

Directions:

This is a 26-question practice test. It does not count toward your overall score, and you may take it as many times as you choose.

Once you've completed a take, click on the **Guide** button in the **Results** section below for a study guide covering the questions that you missed.

1) QID: 50607

If $(-4, -17)$ is a member of f , and f^{-1} exists, then the point _____ is a member of f^{-1} .

Enter the answer as a coordinate pair including the parentheses and comma. If a coordinate is not an integer, enter it as a fraction in simplest form.

2) QID: 54414

Given the following list of points that represent a function, $\{(-4, 9), (-2, 5), (1, -1), (3, -5)\}$, choose the list that represents the inverse.

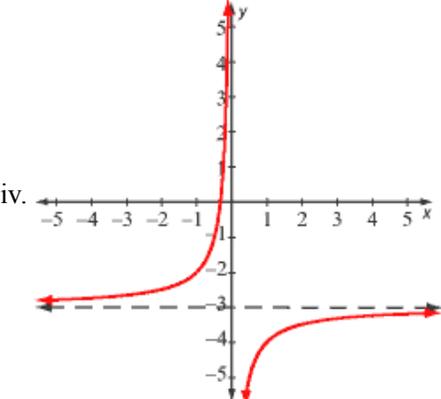
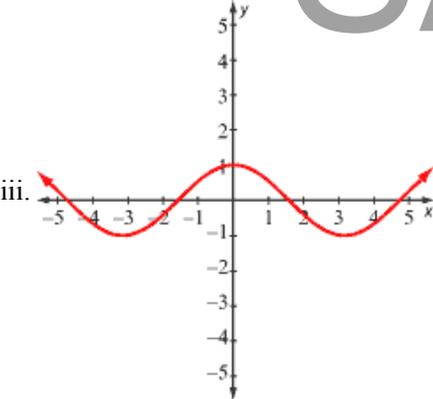
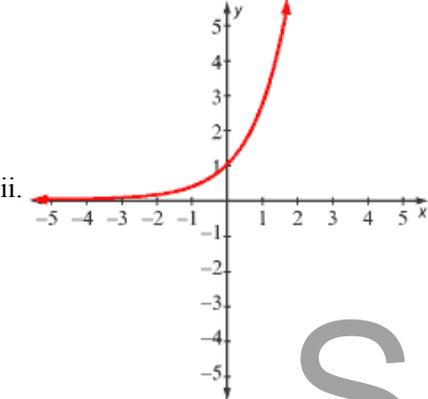
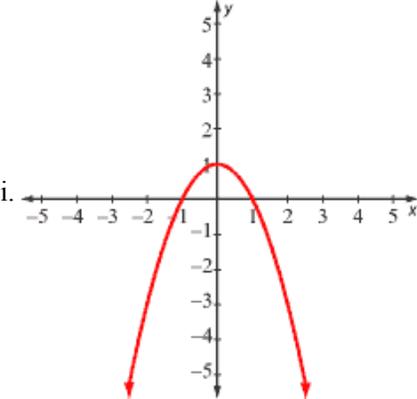
- $\{(-4, 9), (-2, 5), (1, -1), (3, -5)\}$
- $\{(9, 4), (5, 2), (-1, -1), (-5, -3)\}$
- $\{(-4, -9), (-2, -5), (1, 1), (3, 5)\}$
- $\{(9, -4), (5, -2), (-1, 1), (-5, 3)\}$
- None of the above

SAMPLE

- i and iv only
- i, ii, and iv only
- ii and iv only
- iv only
- None of the above

SAMPLE

Use the horizontal line test to decide which of the following is one-to-one and thus has an inverse function.



SAMPLE

4) QID: 50755

Algebraically verify whether f and g are inverses of each other or not:

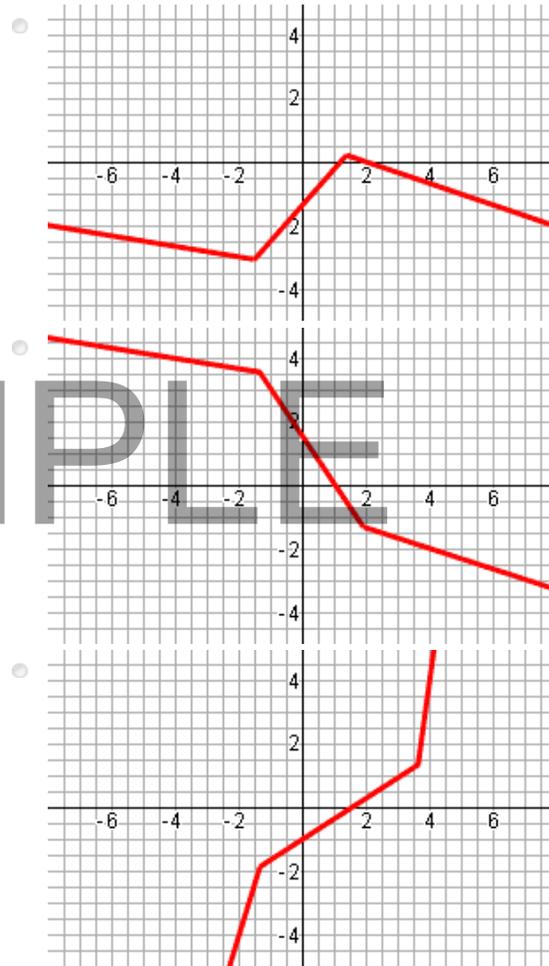
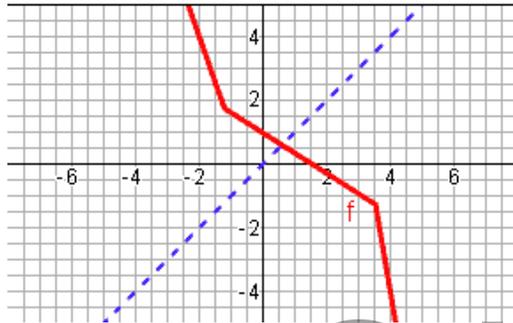
$$f(x) = \sqrt{-7+x}, \text{ domain } [7, \infty)$$

$$g(x) = -7 - x^2, \text{ domain } [0, \infty)$$

- no
- yes

5) QID: 3704

Graph the inverse f^{-1} (if it exists) of the function f .



- The inverse does not exist.

6) QID: 50777

Find the inverse of the function, $f^{-1}(x)$, if it exists.

$$f(x) = \frac{2+4x}{-4-5x}$$

Assume that $x \neq -0.8$.

- $f^{-1}(x) = \frac{-5x-4}{4x+2}$
- $f^{-1}(x) = \frac{4+2x}{-5-4x}$
- $f^{-1}(x) = \frac{-4x-2}{5x+4}$
- $f^{-1}(x)$ does not exist.
- None of the above

7) QID: 50797

Find the inverse of the function, $f^{-1}(x)$, if it exists.

$$f(x) = 3\sqrt{4x+1} - 1$$

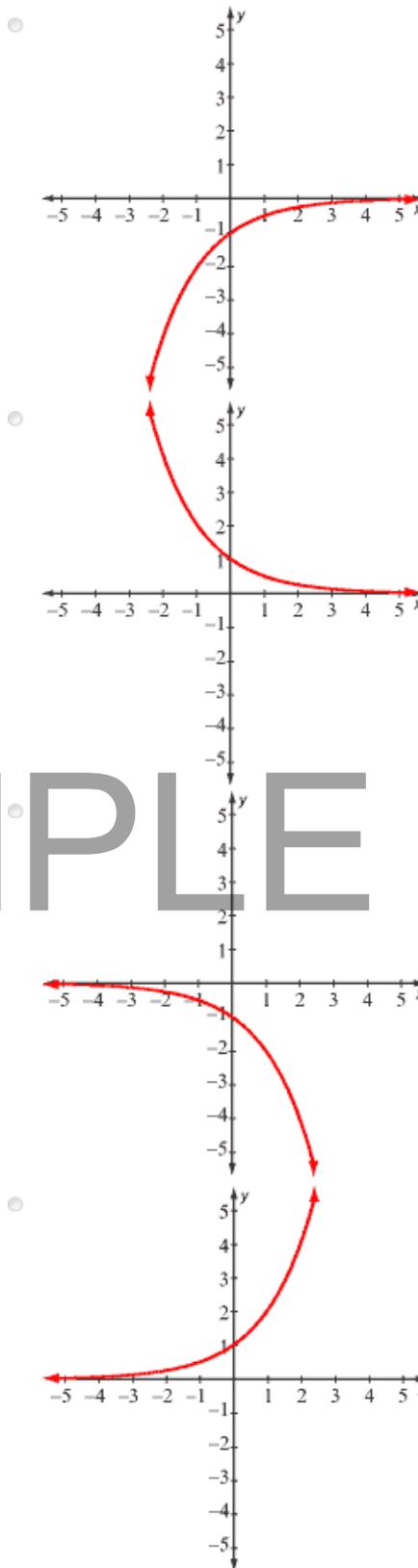
(Assume that $x \geq -0.25$.)

- $f^{-1}(x) = \frac{x^2+2x-8}{-36}$
- $f^{-1}(x) = \frac{x^2+2x-8}{36}$
- $f^{-1}(x) = -36x^2+2x-8$
- $f^{-1}(x) = 36x^2+2x-8$
- None of the above

SAMPLE

Graph the function.

$$f(x) = \left(\frac{1}{2}\right)^x$$



SAMPLE

9) QID: 51097

Solve.

$$16^{4x-7} = 64$$

Enter only a number. Do NOT enter an equation. If the number is not an integer, enter it as a fraction in simplest form. If there is no solution, "no solution" should be entered.

10) QID: 20499

Solve.

$$7^{2x+3} = 49^{8-x}$$

- 0
- $\frac{4}{13}$
- $-\frac{4}{13}$
- $\frac{13}{4}$
- None of the above

11) QID: 54464

Suppose \$40,000 is invested into an account where interest is compounded quarterly. After 20 years the balance is \$145,818. What was the interest rate as a percent?

Enter the percent with the percent symbol. Express your answer to the nearest hundredth of a percent if needed. If the percent is between 0 and 1, place a 0 to the left of the decimal point.

12) QID: 54472

Evaluate: $\log_2 \frac{1}{64}$

If the answer is not an integer, enter the answer as a fraction in simplest form.

13) QID: 54478

Evaluate: $\log_{81} 3$

- 4
- 4
- $\frac{1}{4}$
- $-\frac{1}{4}$
- None of the above

14) QID: 51532

Evaluate:

$$\frac{5}{2} \log_4 \sqrt[3]{4}$$

- $\frac{5}{6}$
- 1
- 12
- 10
- None of the above

15) QID: 51617

Solve.

$$\log_{125} x = \frac{2}{3}$$

- 25
- 10
- $\sqrt[3]{25}$
- $\sqrt{125}$
- None of the above

16) QID: 51699

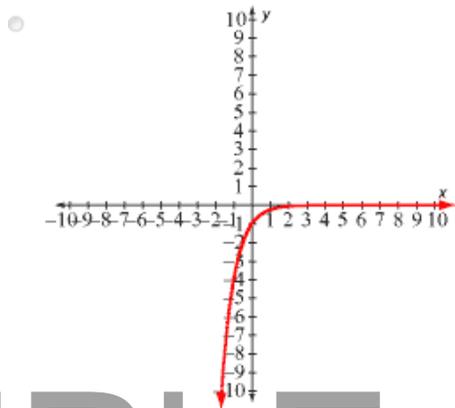
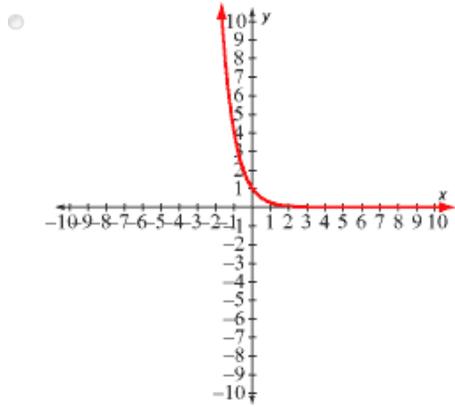
Solve.

$$\log_x 256 = -\frac{4}{5}$$

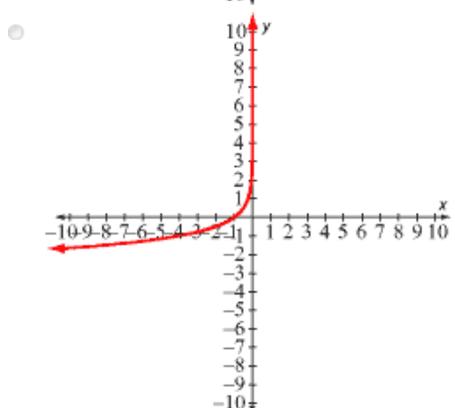
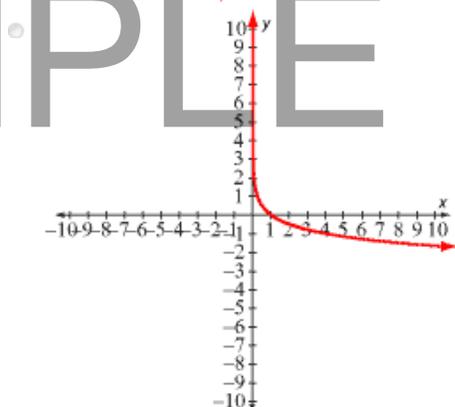
SAMPLE

- 1024
- 4
- $\frac{1024}{5}$
- $\frac{1}{1024}$
- None of the above

Graph: $f(x) = \log_{\frac{1}{4}} x$

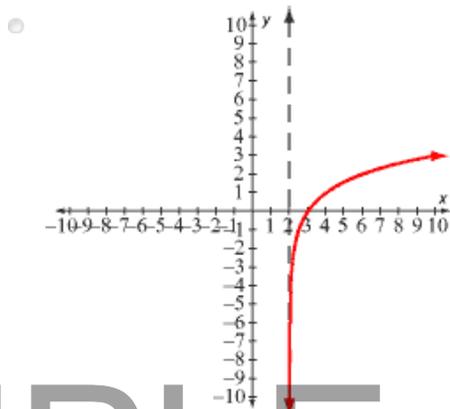
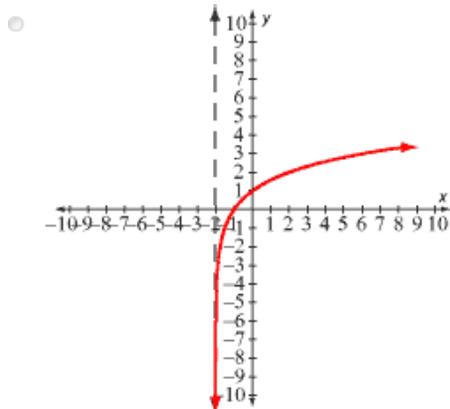


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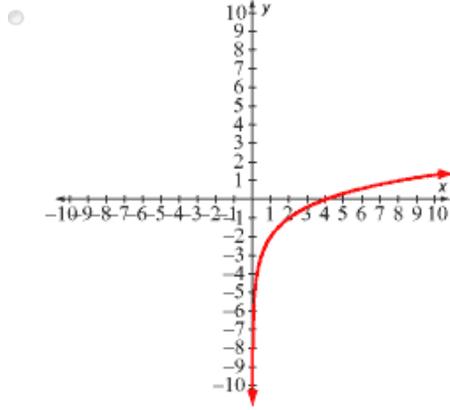
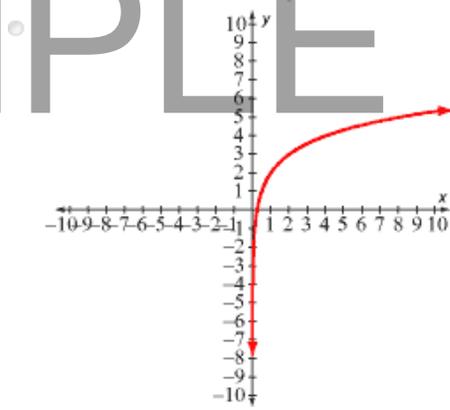


Match the correct graph to the function.

$$f(x) = \log_2(x) + 2$$



SAMPLE



19) QID: 74503

Fully expand the following logarithm, and simplify if possible.

$$\log_4 \frac{x^9 \sqrt{x^2 - 6}}{(x-3)^5}$$

- $\log_4 x^9 + \log_4 \sqrt{x^2 - 6} - 5 \log_4 (x-3)$
- $9 \log_4 x + \frac{1}{2} \log_4 x^2 - \frac{1}{2} \log_4 6 - 5 \log_4 x + 5 \log_4 3$
- $9 \log_4 x + \frac{1}{2} \log_4 (x^2 - 6) - 5 \log_4 (x-3)$
- $9 \log_4 x + \log_4 \sqrt{x^2 - 6} - 5 \log_4 (x-3)$

20) QID: 51807

Condense the expression to the logarithm of a single quantity.

$$\left[6 \log_7 (x+2) + 7 \log_7 (x+5) \right] - \frac{1}{2} \log_7 x$$

- $\log_7 \frac{(6x+12)(7x+35)}{\frac{1}{2}x}$
- $\log_7 \frac{(x+2)^6 (x+5)^7}{\sqrt{x}}$
- $\log_7 \frac{\sqrt{x}}{(x+2)^6 (x+5)^7}$
- $\log_7 \frac{(x+2)^6 (x+5)^7}{x^2}$

SAMPLE

21) QID: 40791

Solve.

$$0.3^{1+x} = 1.7^{2x-1}$$

- 0.5999
- 2.5141
- 0.2973
- 0.7215
- None of the above

22) QID: 52198

Solve for x .

$$\log_2 (x+4) - \log_2 (x+2) = \log_2 3$$

- 1
- 5
- 1
- 2
- None of the above

23) QID: 52316

Solve for x .

$$e^{\ln(x+15)} = 5 + 6x$$

- 6
- 2
- 2
- 3
- None of the above

24) QID: 40159

Suppose \$2,500 is invested in a semiannually compounding account at 12%. Approximately how long it will take for the balance to reach \$10,000?

- 9 years, 8 months
- 15 years, 1 month
- 13 years, 2 months
- 11 years, 11 months

25) QID: 52440

The mathematical model for learning an assembly-line procedure needed for assembling one component of a manufactured item is

$$P = \frac{0.94}{1 + e^{-0.2n}}$$

where P is the proportion of correctly assembled components after n practice sessions. How many practice sessions are required to have at least 65% of the components correctly assembled within the given time period? Round any non-integer to the next highest whole number.

- 5
- 9
- 2
- 7
- None of the above

26) QID: 52429

An investor wants to analyze the earnings of a mutual fund account. Three years ago, the value of the account was \$36,000 and it is now worth \$50,400. If the account is compared to a bank account paying interest that is compounded continuously, what interest rate rounded to the nearest hundredth of a percent would the bank account have to pay to match the mutual fund account's earnings? (Assume the only deposit was to open the account.)

Enter the interest rate as a percent with the percent symbol. If the interest rate is not a whole value, enter it as a decimal where the last digit is not zero and there is a zero before the decimal point for values less than 1. Round the interest rate to the nearest hundredth of a percent, if necessary.