

2.8 Recitation Exercises

1. If the graph of $f(x) = |x + 1| - 2$, $x \leq k$, is one-one, then a possible value of k is equal to
 A) 0 B) 1 C) -1 D) 2 E) 3

2. For the following functions, find $f^{-1}(x)$ and state its domain and range
 - a) $f(x) = -\sqrt{4 - x^2}$ for $-2 \leq x \leq 0$.
 - b) $f(x) = 2 + \sqrt{3 + x}$ for $x \geq -3$
 - c) $f(x) = \frac{2x+3}{x-1}$

3. If $f(x) = -x^2 + 4x$, $x \leq 2$, then $f^{-1}(x)$ is
 - A) $y = 2 \pm \sqrt{4 - x}$, $x \leq 4$
 - B) $y = 2 - \sqrt{x - 4}$, $x \geq 4$
 - C) $y = 2 - \sqrt{4 - x}$, $x \leq 4$
 - D) $y = 2 + \sqrt{4 - x}$, $x \leq 4$
 - E) $y = 2 + \sqrt{x - 4}$, $x \geq 4$

4. Let $f(x) = \frac{3x-k}{x-2}$ and $f^{-1}(x)$ exists. If $f^{-1}(-2) = 1$, then the value of k is
 A) -1 B) 1 C) 0 D) -2 E) 2

4.1 & 4.2 Recitation Exercises

- If the function $y = 4^{x+2} - 5$ is written as $y = k \left(\frac{1}{2}\right)^{bx} + c$, then $k + b + c =$
 A) 11 B) 7 C) 9 D) 13 E) 12
- Find the intersection points of the graphs of $y = \left(\frac{1}{3}\right)^{2x+5}$ and $y = 27$
- Graph the function. State the domain, range, and asymptote:
 - $y = 3 - 10^{-x}$
 - $f(x) = e^{-|x|} - 1$
- The adjacent figure represents the graph of:

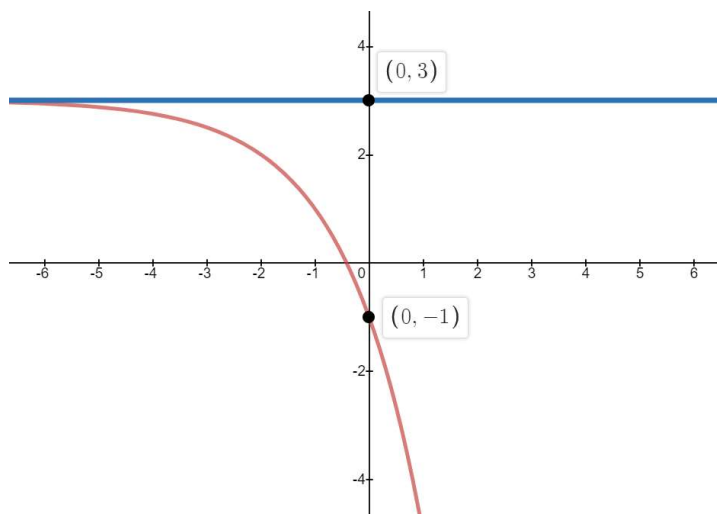
(a) $y = -\left(\frac{1}{2}\right)^{x+2} + 3$

(b) $y = \left(\frac{1}{2}\right)^{x+2} - 3$

(c) $y = -(2)^{x+2} + 3$

(d) $y = (2)^x + 3$

(e) $y = (2)^{x-2} + 3$



4.3 Recitation Exercises

1. Use the definition of the logarithmic function to find x in the following equations:
 - a) $\log_x 25 = 2$
 - b) $\log_7 \frac{1}{49} = 3x$
2. Find the domain of the following functions:
 - a) $f(x) = \ln x + \ln(2 - x)$.
 - b) $f(x) = \log_3 \left(\frac{x-1}{2-x} \right)$.
 - c) $f(x) = \log|x^2 - x|$.
3. Graph the function. State the domain, range, and asymptote:
 - a) $y = 1 - \log(1 - x)$
 - b) $y = |\ln x|$
4. The graph of $y = \log_3|x - 3| - 1$ is below the x -axis on the intervals
 - A) $(2, 3) \cup (3, 4)$.
 - B) $(-\infty, 0) \cup (6, \infty)$.
 - C) $(-1, 0) \cup (0, 1)$.
 - D) $(0, 3) \cup (3, 6)$.
 - E) $(-\infty, 2) \cup (3, \infty)$.

4.4 Recitation Exercises

1. If $\log_{10} 2 = 0.30$, $\log_{10} 3 = 0.48$, then $\log_{10} \left(\frac{9}{25}\right) =$

- A) -0.24 B) -0.44 C) 0.36 D) -0.32 E) -0.28

2. If $\log 2 = c$, then $\log_8 \sqrt[3]{10} =$

- A) $\frac{1}{9c}$ B) $\frac{2}{3c}$ C) $\frac{c}{9}$ D) $\frac{1}{c}$ E) $\frac{3c}{2}$

3. If $M = -\log_{1/2} \sqrt[4]{2}$ and $N = \left[\frac{1}{25}\right]^{-2 \log_5 2}$, then $N^M =$

- A) 2 B) -2 C) $\frac{1}{2}$ D) $-\frac{1}{2}$ E) 4

4. Use the Laws of Logarithms to combine the following expression

$$3 \log_2 x - \frac{1}{3} \log_4 x^{12} + \frac{1}{2} \log_{\frac{1}{2}} x^6, \quad \text{where } x > 0$$

5. If $a > 0$, $a \neq 1$, $x > 0$, $x \neq 1$, then simplify the expression

$$(\log_{\sqrt{10}} 1000)(\log_a \sqrt{x})(\log_{x^3} a)$$

4.5 Recitation Exercises

1. Solve the following equations:

a) $4^x + 2^{1+2x} = 50$

b) $e^x + 15e^{-x} - 8 = 0$

c) $\log_2(\log_3 x) = 4$

2. The sum of all solutions to the equation $\log_2 \sqrt{x} = -\sqrt{\log_2 x}$ is

A) 16

B) 17

C) 1

D) 24

E) 12

3. Find the intersection point(s) between the following functions

$$f(x) = \log_4 8 - \log_4(x + 1) \quad \text{and} \quad g(x) = \log_{16}(x + 1)$$

4. Find the inverse of the following functions

a) $f(x) = 3^{x+1}$

b) $f(x) = \log_2(x - 1)$