2.8 Recitation Exercises

1. If the graph of $f(x) = |x+1| - 2,\ \ x \le k$, 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 $-2 \le x \le 0$.

b) $f(x) = 2 + \sqrt{3+x}$ for $x \ge -3$

c) $f(x) = \frac{2x+3}{x-1}$

3. If $f(x) = -x^2 + 4x,\ x \le 2,\ then\ \ f^{-1}(x)$ is

A) $y = 2 \pm \sqrt{4-x}\,, x \le 4$

B) $y = 2 - \sqrt{x-4}\,, x \ge 4$

C) $y = 2 - \sqrt{4-x}\,, x \le 4$

D) $y = 2 + \sqrt{4-x}\,, x \le 4$

E) $y = 2 + \sqrt{x-4}\,, x \ge 4$

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

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4.1 & 4.2 Recitation Exercises

1. 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

2. Find the intersection points of the graphs of $y = \left(\frac{1}{3}\right)^{2x+5}$ and $y = 27$

3. Graph the function. State the domain, range, and asymptote:

a) $y = 3 - 10^{-x}$

b) $f(x) = e^{-|x|} - 1$

4. The adjacent figure represents the graph of:

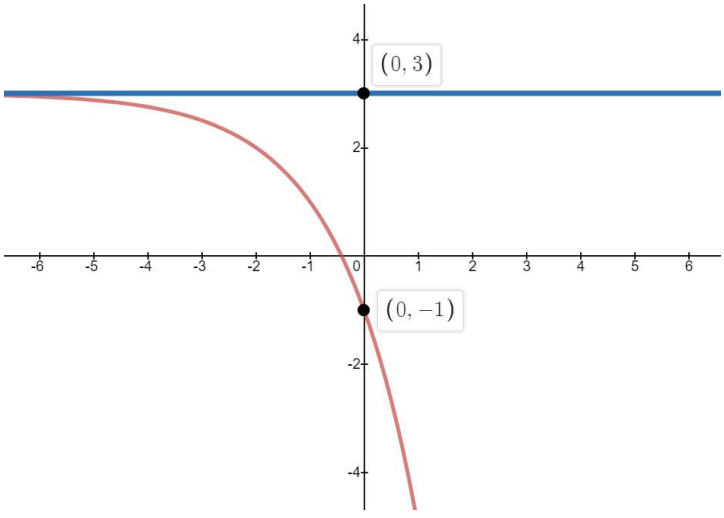
(a) $y = -\left(\frac{1}{2}\right)^{x+2} + 3$

(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

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

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

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