Gateway Test 2A

The Exponential and Logarithmic Functions

1. Solve for x.

$$\ln(e^{7x}) = 15$$

2. Solve for x.

$$\frac{e^{x+5}}{e^5} = 3$$

3. Solve for x.

$$(e^3)^{2x} = e^3 e^{2x}$$

4. Solve for x.

$$e^{[2\ln x - \ln(x^2+x-3)]} = 1$$

5. Solve for x.

$$3^{2x} - 2 \cdot 3^{(x+5)} + 3^{10} = 0$$

6. Sketch the graph of the function.

$$f(x) = e^x$$

7. Find the x-intercept for the graph of the function.

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

8. Use the properties of logarithms to expand the expression.

$$\ln\frac{(4x^5 - x - 1)\sqrt{x-7}}{(x^2+1)^3}$$

9. Solve for x.

$$\ln x - \ln(x+1) = 1$$

10. Find the domain of the function.

$$f(x) = \ln(3x + 2)$$

Gateway Test 2B

The Exponential and Logarithmic Functions

1. Solve for x.

$$\ln(e^{-x}) = 3$$

2. Solve for x.

$$\frac{e^{2x+3}}{e^3} = 5$$

3. Solve for x.

$$(e^5)^{3x} = e^5 e^{3x}$$

4. Solve for x.

$$e^{[2\ln x - \ln(x^2+2x-5)]} = 1$$

5. Solve for x.

$$4^{2x} - 2 \cdot 4^{(x+4)} + 4^8 = 0$$

6. Sketch the graph of the function.

$$f(x) = \ln x$$

7. Find the x-intercept for the graph of the function.

$$f(x) = \ln x - 3$$

8. Use the properties of logarithms to expand the expression.

$$\ln\left[\frac{(3x^6 + 2)\sqrt{x+8}}{(x-1)^4}\right]$$

9. Solve for x.

$$\ln x - \ln(x-1) = 1$$

10. Find the domain of the function.

$$f(x) = \ln(5 - 3x)$$

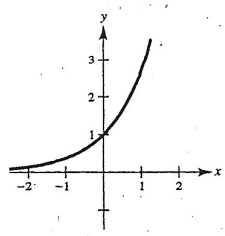
GATEWAY TEST Answers

The Exponential and Logarithmic Functions—Tests 2A, 2B

Test 2A

1. $\frac{15}{7}$ 2. $\ln 3$ 3. $\frac{3}{4}$ 4. 3 5. 5

6.



7. $(e^{-2}, 0)$

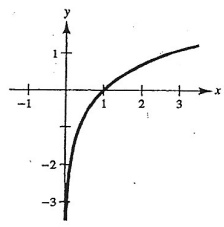
8. $\ln(4x^5 - x - 1) + \frac{1}{2}\ln(x - 7) - 3\ln(x^2 + 1)$

9. $\frac{e}{1 - e}$ 10. $\left(\frac{2}{3}, \infty\right)$

Test 2B

1. -3 2. $\ln\sqrt{5}$ 3. $\frac{5}{12}$ 4. $\frac{5}{2}$ 5. 4

6.



7. $(e^3, 0)$

8. $\ln(3x^6 + 2) + \frac{1}{2}\ln(x + 8) - 4\ln(x - 1)$

9. $\frac{e}{e - 1}$ 10. $\left(-\infty, \frac{5}{3}\right)$