

Solve the equations. Give **exact** answers.

1. $8 \cdot 3^x = 5$
(6)

1. _____

2. $e^{1-x} = 5$
(6)

2. _____

3. $\log_6(x+3) + \log_6(x+4) = 1$
(6)

3. _____

4. $3\log_2 x = -\log_2 27$
(6)

4. _____

Solve the system of equations.

5. $3x - y = -2$
 $2x^2 - y = 0$
(10)

5. _____

6. $x + y = 5$
 $y - z = 2$
 $x + z = 3$
(10)

6. _____

7. Use your calculator to solve the following equation. Round your answer to three decimal places.
(4) $2^x = 5$

7. _____

8. Write the expression as a sum, difference and/or multiple of logarithms.

(6) $\log \frac{x^3 \sqrt{y}}{2z^2}$

9. Rewrite as logarithm of single quantity

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

For problems 10-17, match the function with the proper graph.

(16)

_____ 10. $y = \log_3 x$

_____ 14. $y = -\log_3 x$

_____ 11. $y = \log_3 x - 1$

_____ 15. $y = \log_3(1 - x)$

_____ 12. $y = \log_3(-x)$

_____ 16. $y = -\log_3(-x)$

_____ 13. $y = \log_3(x - 1)$

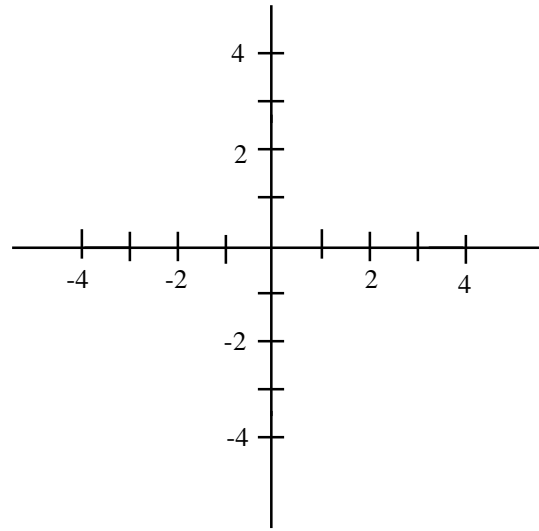
_____ 17. $y = 1 - \log_3 x$

18. Evaluate $\frac{3 \ln 29}{\ln 7 - \ln 2}$ to nearest 3 decimal places.

(6)

19. Sketch the graph of $f(x) = 3^{x+1} - 2$. State domain and range

(10)



domain _____

range _____

20. Graph the system.

(8)

$$x^2 + y^2 \leq 16$$

$$x^2 + y \geq 2$$

