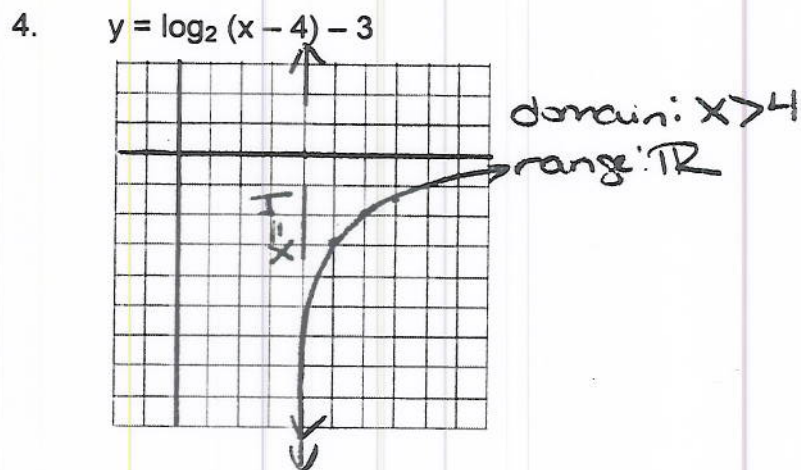
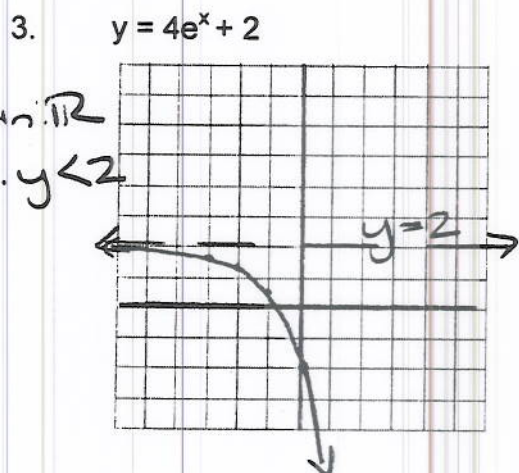
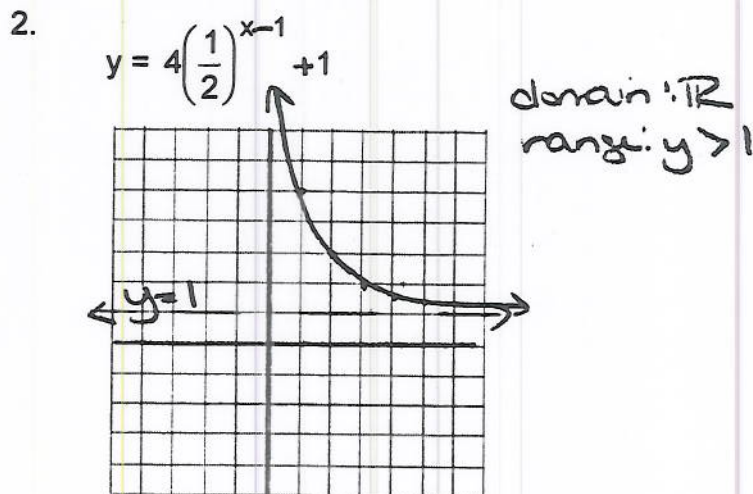
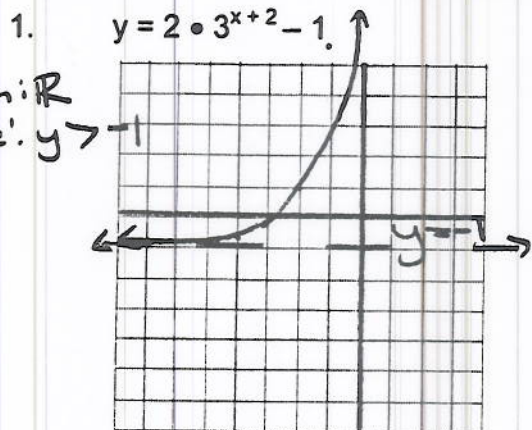


Graph the function, identify the asymptote, and state the domain and range.



Solve. Formulas are given below.

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$y = a(1-r)^t$$

$$A = pe^{rt}$$

5. You deposit \$500 in an account that pays 3% annual interest compounded continuously. What is the balance after 2 years?

$$A = 500e^{(0.03)(2)} \approx \$530.92$$

6. A new all-terrain vehicle (ATV) costs \$800. The value of the ATV decreases by 10% each year. What is the value of the ATV after 5 years? (Hint: Use.)

$$y = 800(1 - 0.10)^5 \approx \$472.39$$

7. You deposit \$3000 in a savings account that pays 3.12% annual interest. If the account compounds monthly, how long will it take for the account to reach \$4000 to the nearest year?

$$4000 = 3000\left(1 + \frac{0.0312}{12}\right)^{12t}$$

$$\frac{4}{3} = 1.0026^{12t}$$

$$\log_{1.0026} \frac{4}{3} = 12t$$

$$t = \frac{\log_{1.0026} \frac{4}{3}}{12} \approx 9 \text{ year}$$

Find the inverse function.

8. $y = 8^x$
 $\Rightarrow x = 8^y$
 $\log_8 x = y$
 $y = \log_8 x$

9. $y = \ln(x-2)$
 $\Rightarrow x = \ln(y-2)$
 $e^x = y-2$
 $y = e^x + 2$

10. $y = \log_6 x$
 $\Rightarrow x = 1066 y$
 $6^x = y$
 $y = 6^x$

11. $y = e^{2x}$
 $\Rightarrow x = e^{2y}$
 $\ln x = 2y$
 $y = \frac{\ln x}{2}$

Expand the expression.

12. $\log_8 \frac{3x^4}{y}$
 $\log_8 3 + 4\log_8 x - \log_8 y$

13. $\ln x^5 y^2 z$
 $5\ln x + 2\ln y + \ln z$

Condense the expression.

14. $\ln x + 3\ln y - 2\ln 4$
 $\ln \frac{xy^3}{16}$

15. $8\log x + \frac{1}{2}\log y$
 $\log x^8 \sqrt{y}$

Solve the equation.

16. $125^x = 25^{x+1}$
 $5^{3x} = 5^{2(x+1)}$
 $3x = 2x + 2$
 $x = 2$

17. $8^x = 23$
 $\log_8 23 = x$
 $x \approx 1.508$

18. $\log_8 (x+6) = \log_8 (4-x)$
 $x+6 = 4-x$
 $2x = -2$
 $x = -1$

19. $\log x + \log (x+3) = 1$
 $\log x(x+3) = 1$
 $10^1 = x^2 + 3x$
 $0 = x^2 + 3x - 10$
 $0 = (x+5)(x-2)$
 $x = -5, 2$

20. $e^{x/2} - 2 = 5$
 $e^{x/2} = 7$
 $\ln 7 = \frac{x}{2}$
 $2\ln 7 = x$
 $x \approx 2.892$

21. $1 + 4\ln x = 9$
 $4\ln x = 8$
 $\ln x = 2$
 $e^2 = x$
 $x \approx 7.389$