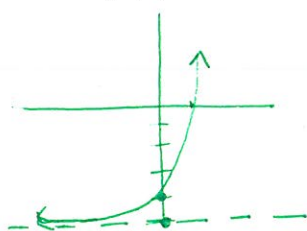
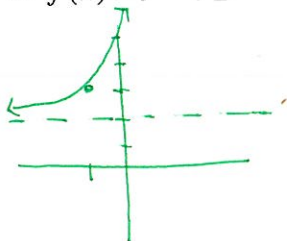


Graph.

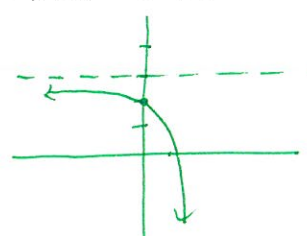
1. $f(x) = 3^x - 5$



2. $f(x) = e^{x+1} + 2$



3. $f(x) = -2^x + 3$



4. \$1500 is invested at a rate of 8% compounded quarterly. What is the balance after 5 years?

$$A = 1500 \left(1 + \frac{.08}{4}\right)^{(4 \cdot 5)}$$

$$= \boxed{\$ 2228.92}$$

5. \$3500 is invested at a rate of 4.5% compounded continuously. What is the balance after 10 years?

$$A = 3500 e^{(.045 \cdot 10)}$$

$$= \boxed{\$ 5489.09}$$

Evaluate (without a calculator).

7. $\log_4 4 = 1$

8. $\log_4 4^7 = 7$

9. $\log_2 \frac{1}{32} = -5$

10. $\ln e^{1-x} = 1-x$

11. $\log_5 25^4$

$$4 \log_5 25$$

$$4 \cdot 2$$

$$= \boxed{8}$$

12. $\log_3 27^{100}$

$$100 \log_3 27$$

$$100 \cdot 3$$

$$= \boxed{300}$$

13. $\log_a \sqrt[3]{a}$

$$\frac{1}{3} \log_a a$$

$$\frac{1}{3} \cdot 1$$

$$= \boxed{\frac{1}{3}}$$

14. $\ln \sqrt[4]{e^3}$

$$\frac{1}{4} \ln e^3$$

$$\frac{1}{4} \cdot 3$$

$$= \boxed{\frac{3}{4}}$$

Find domain.

15. $f(x) = \ln(3x+1)$

$$\left(-\frac{1}{3}, \infty\right)$$

16. $f(x) = 3 \log(5x-2)$

$$\left(\frac{2}{5}, \infty\right)$$

17. $f(x) = 3 - \log(x^2 - 1)$

$$x^2 - 1 > 0$$

$$x^2 > 1$$

$$x > \pm 1$$

$$\boxed{(1, \infty) \cup (-\infty, -1)}$$



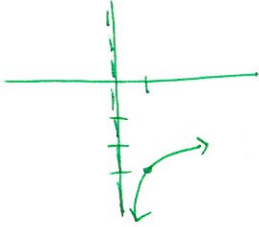
Evaluate (with a calculator).

18. $\log_2 7 = 2.807$

19. $\log_{\frac{1}{2}} 13 = -3.7$

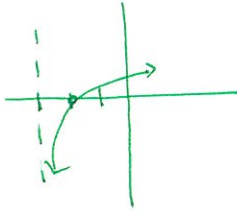
Graph and state domain.

21. $f(x) = -3 + \ln x$



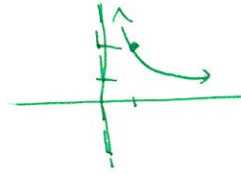
$D: (0, \infty)$

22. $f(x) = \log(x+3)$



$D: (-3, \infty)$

23. $f(x) = -\log_4 x + 2$



$D: (0, \infty)$

Expand.

24. $\log_3 \sqrt[3]{\frac{a^2 b}{c}}$

$\frac{1}{3} (2 \log_3 a + \log_3 b - \log_3 c)$

25. $\log_4 \left(\frac{x^3 y^2}{\sqrt{w}} \right)$

$3 \log_4 x + 2 \log_4 y - \frac{1}{2} \log_4 w$

26. $\ln \frac{5x}{\sqrt[3]{x^2+1}}$

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

Condense.

27. $\frac{1}{4} \log_3 16 - 2 \log_3 5 + \log_3 7$

$\log_3 \sqrt[4]{16} - \log_3 5^2 + \log_3 7$

$\log_3 \frac{2 \cdot 7}{25}$

$\log_3 \frac{14}{25}$

28. $\frac{1}{5} [3 \log(x+1) + 2 \log(x-1) - \log 7]$

$\frac{1}{5} [\log(x+1)^3 + \log(x-1)^2 - \log 7]$

$\frac{1}{5} \left[\log \frac{(x+1)^3 (x-1)^2}{7} \right]$

$\log \left(\frac{(x+1)^3 (x-1)^2}{7} \right)^{\frac{1}{5}}$

29. $\log_2(x-2) + \log_2(x+2)$

$\log_2 (x-2)(x+2)$

$\log_2 (x^2 - 4)$

30. Evaluate $\log_b \left(\frac{14}{3b} \right)$ given that $\log_b 2 = 0.2789$, $\log_b 3 = 0.4421$, and $\log_b 7 = 0.7831$

$\log_b \frac{2 \cdot 7}{3b} = \log_b 2 + \log_b 7 - (\log_b 3 + \log_b b)$

$= 0.2789 + 0.7831 - 0.4421 - 1$

$= -0.3801$