6.6 Practice Set

Graph each of the following relations and determine whether or not each represents a function. Is it one-to-one? Give the domain, range, x-intercept(s), y-intercept(s), and any asymptotes.

1. $\boldsymbol{y = -|x| + 2}$
2. $\boldsymbol{y = (x - 5)^3 - 1}$
3. $\boldsymbol{y = -\sqrt{x + 4}}$
4. $\boldsymbol{y = -\frac{1}{x+3} - 1}$
5. $\boldsymbol{y = \frac{1}{(x-1)^2} + 2}$
6. $\boldsymbol{y = \sqrt{x} + 2}$
7. $\boldsymbol{y = 3(x + 1)^2 - 2}$
8. $\boldsymbol{y = -2x^2 + 6x - 12}$
9. $\boldsymbol{x = 2(y - 3)^2 + 2}$
10. $\boldsymbol{x = 3y^2 + 6y - 1}$
11. $\boldsymbol{x^2 + (y + 2)^2 = 9}$
12. $\boldsymbol{(y - 1)^2 - \frac{x^2}{9} = 1}$
13. $\boldsymbol{x^2 + y^2 + 6x - 4y = 12}$
14. $\boldsymbol{2x^2 + 9y^2 - 72y + 4x + 128 = 0}$
15. $\boldsymbol{y = -2^{x+1} + 3}$
16. $\boldsymbol{y = \log_3(x - 2) + 4}$
17. $\boldsymbol{y = e^x - 5}$
18. $\boldsymbol{y = -ln(x + 2)}$

Distributed Practice Problems

For each of the following pairs of functions, find the compositions $(\boldsymbol{f} \circ \boldsymbol{g})(\boldsymbol{x})$ **and** $(\boldsymbol{g} \circ \boldsymbol{f})(\boldsymbol{x})$ and give any restrictions on the domain of the resulting function.

19. $\begin{cases} f(x) = 3x - 5 \\ g(x) = \frac{1}{2x} \end{cases}$

20. $\begin{cases} f(x) = 2x^2 - 5x + 3 \\ g(x) = x + h \end{cases}$