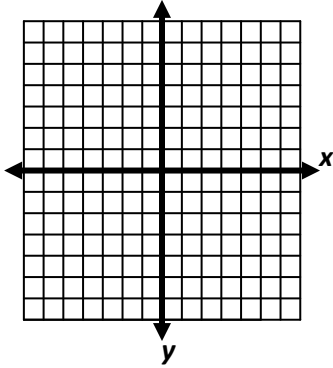


Algebra 2 Honors
WS: Chapter 6 Review

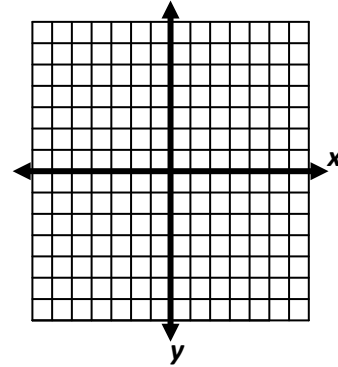
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Part I: Graphing
Graph each function.

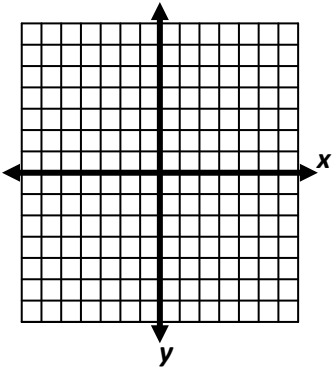
1. $f(x) = \begin{cases} 2x - 4, & x < 0 \\ 5, & x \geq 0 \end{cases}$



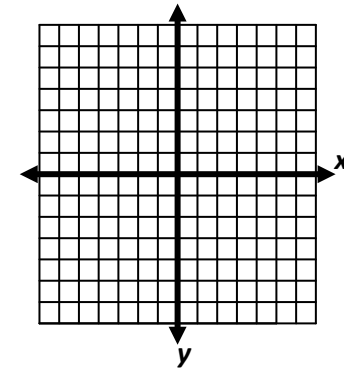
2. $g(x) = \begin{cases} \frac{3}{2}x - 1, & x \leq 2 \\ \sqrt{x+2}, & x > 2 \end{cases}$



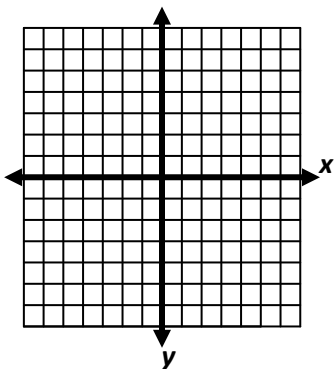
3. $h(x) = -\frac{4}{3}|x-1| + 4$



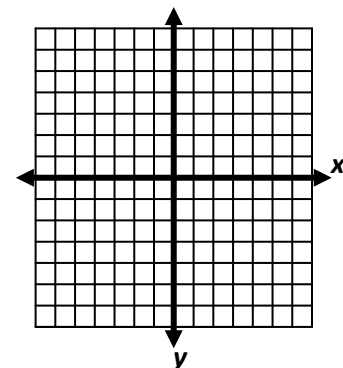
4. $k(x) = \begin{cases} -x, & x \leq -2 \\ -x^2 - 4x, & x > -2 \end{cases}$



5. Given $f(x) = 2x^2 + 1$ and $g(x) = f\left(\frac{1}{2}x\right) + 1$,
graph $g(x)$.



6. Given $f(x) = 2x - 4$ and
 $g(x) = -\frac{1}{2}f(x) - 1$, graph $g(x)$.

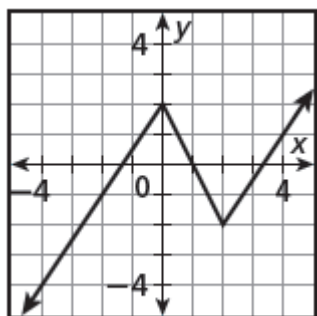


Part II: Problem Solving

7. Given $f(x) = \begin{cases} 2x - 2, & x \leq 3 \\ -4x + 16, & x > 3 \end{cases}$, write the rule for $h(x)$, a vertical translation of $f(x)$ 2 units up.

8. Given $f(x) = \begin{cases} 3x + 2, & x \leq 0 \\ x^2, & x > 0 \end{cases}$, write the rule for $g(x)$, a horizontal translation of $f(x)$ 7 units right.

9. The graph of $f(x)$ is shown below. If $g(x) = -f(x) + 1$, what is $g(2)$?



Given $f(x) = x^2 - 5x - 14$ and $g(x) = x - 7$, find each function.

10. $(f + g)(x)$

11. $(f - g)(x)$

12. $(g - f)(x)$

13. $(fg)(x)$

14. $\left(\frac{f}{g}\right)(x)$

15. $\left(\frac{g}{f}\right)(x)$

Let $f(x) = x - 2$ and $g(x) = \frac{8}{x+1}$.

16. Find $f(g(-2))$ and $g(f(-2))$.

17. Find $f(g(1))$ and $g(f(1))$.

18. Find $g(f(x))$ and state its domain.

19. Find $f(g(x))$ and state its domain.

In 20 - 23, find the inverse of each function. Determine whether the inverse is a function, and state its domain and range.

20. $f(x) = 5 - 8x$

21. $f(x) = \left(\frac{1}{3}x + 2\right)^2$

22. $f(x) = \frac{5}{2x+8}$

23. $f(x) = 3 + \sqrt{x-5}$

In 24 - 25, determine by composition whether each pair of functions are inverses.

24. $f(x) = 3x - 5$ and $g(x) = \frac{x-3}{5}$

25. $f(x) = \sqrt[3]{x-5}$ and $g(x) = x^3 + 5$

26. The table shows some values for the function f . What is the value of $f^{-1}(-2)$?

x	-2	0	2	4
$f(x)$	7	4	1	-2

Part III: Applications

27. A bicycle delivery service charges \$6 to deliver a package that weighs 8 ounces or less. For each additional ounce, the services charges \$1.50 per ounce. Write a piecewise function for the amounts that this company charges to deliver packages that weigh 3 pounds or less.
28. Roscoe earns \$9.50 per hour at the woodcrafts store for up to 40 hours per week. For each hour over 40 hours, he earns \$13.00 per hour. Company policy limits his hours to no more than 60 per week. Roscoe wants to know how much he can earn in a week.
- (a) Write a piecewise function for earnings $E(h)$ as a function of hours worked (h).
- (b) How much will Roscoe earn if he works 56.5 hours in one week?
- (c) Roscoe earned \$471 last week. How many hours did he work?
29. Because of high fuel costs, an airline begins adding fuel surcharge of \$30 to the price of each airline ticket the airline sells. Also, the airline must add 9% to the price for airport and sales taxes. Write a composite function for how much a person would pay for a ticket with this airline that is x dollars before surcharges and taxes.
30. The formula for the surface area of a sphere with radius r is $A(r) = 4\pi r^2$. Find and interpret the inverse of $A(r)$.
31. The number of times that a cricket chirps per minute can be found by using the function $N(F) = 4F - 160$, where F is the temperature in degrees Fahrenheit.
- (a) Find and interpret the inverse of $N(F)$.
- (b) What is the temperature when the cricket is chirping 60 times a minute?
- (c) How many times will the cricket chirp in 1 minute at a temperature of 80°F ?