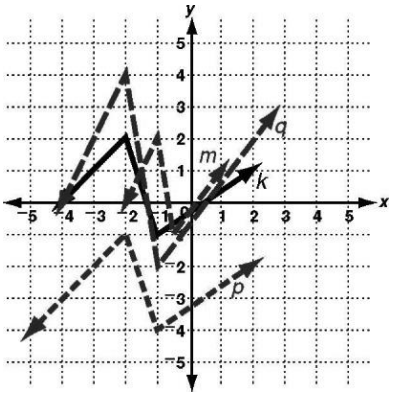
MODULE 5 Polynomial Functions

LESSON 5-1

Practice and Problem Solving: A/B

1. $g(x) = f(-x) + 3$
2. $g(x) = f\left(\frac{1}{5}x - 2\right)$
3. $g(x) = \frac{1}{8}f(x) - 6$
4. $g(x) = -2f(x + 7) - 5$

Graph for Problems 5–8:

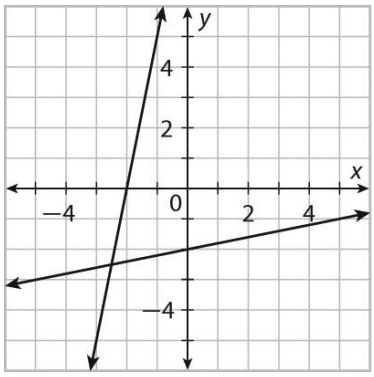


5. *x*-coordinate
6. It's 3 less than the original *y*-coordinate.
7. *y*-coordinate
8. (*x*, *y*) becomes (*x* − 2, *y* + 4).

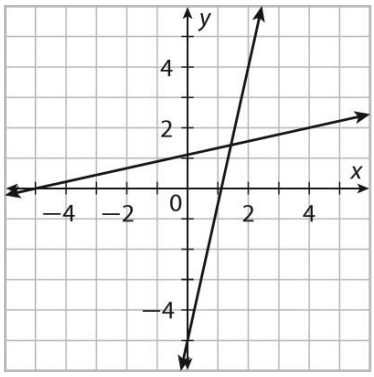
LESSON 5-2

Practice and Problem Solving: A/B

1. $f^{-1}(x) = -\frac{x - 10}{4}$
2. $g^{-1}(x) = -\frac{x + 10}{15}$
3. $h^{-1}(x) = 4x + 12$
4. $j^{-1}(x) = \frac{6x - 1}{3}$
5. $f^{-1}(x) = \frac{x - 10}{5}$



6. $f^{-1}(x) = \frac{2}{9}x + \frac{10}{9}$

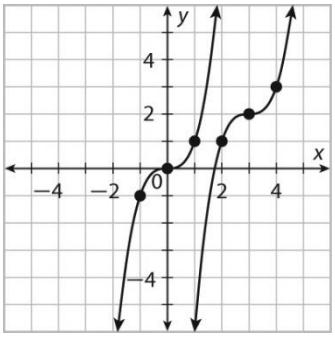


7. yes
8. no
9. yes

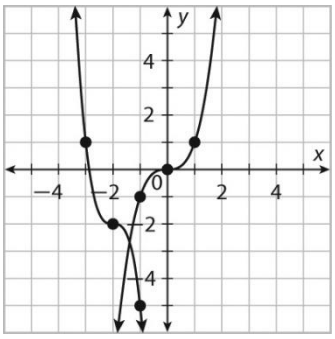
LESSON 5-3

Practice and Problem Solving: A/B

1. reference points: (2, 1), (3, 2), and (4, 3)

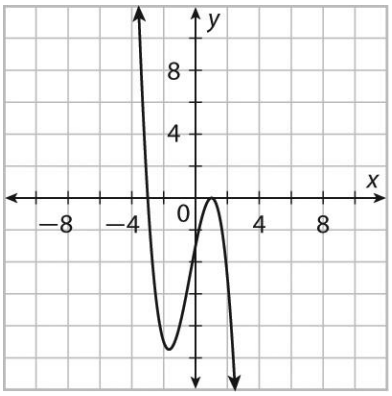


2. reference points: (–3, 1), (–2, –2), and (–1, –5)



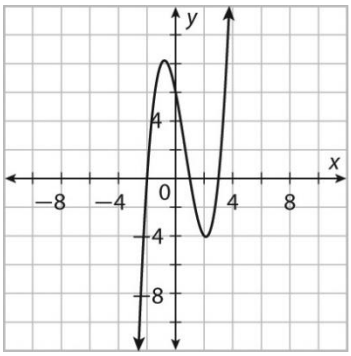
3. $g(x) = - (x – 0)^3 + 2$
4. $g(x) = \left(2\left(x-3\right)\right)^3 + 1$
5. $g(x) = -\left(x+7\right)^3 + 11$
6. $g\left(x\right) = 6\left(x-9\right)^3 - 3$

6.



End behavior: As $x \to +\infty$, $f(x) \to -\infty$, As $x \to -\infty$, $f(x) \to +\infty$; x-intercepts: $\left(-3,\ 0\right)$ and $\left(1,\ 0\right)$; Above: $x < -3$; Below: $x > -3$

7.



End behavior: As $x \to +\infty$, $f(x) \to +\infty$, As $x \to -\infty$, $f(x) \to -\infty$; x-intercepts: (–2, 0), (1, 0) and (3, 0); Above: $-2 < x < 1$ and $x > 3$; Below: $x < -2$ and $1 < x < 3$

LESSON 5-4

Practice and Problem Solving: A/B

1. Even; negative
2. Even; positive
3. Odd; positive
4. 2 turning points; 1 local max; 1 local min
   x-intercepts: 0, 4
5. 3 turning points; 1 local max; 1 global max; 1 local min
   x-intercepts: 0, 2, -1