

**LESSON**  
**6.3****Practice C***For use with pages 428–435***Let  $f(x) = 2x^2 + 3x^{1/2} - 5$ ,  $g(x) = x - 4x^{1/2} + 1$ , and  $h(x) = 4x^2 - x^{1/2}$ .****Perform the indicated operation.**

- |                  |                  |
|------------------|------------------|
| 1. $f(x) + g(x)$ | 2. $f(x) + h(x)$ |
| 3. $h(x) + g(x)$ | 4. $f(x) - g(x)$ |
| 5. $h(x) - f(x)$ | 6. $g(x) - h(x)$ |

**Let  $f(x) = x^2 + 1$ ,  $g(x) = -3x^{-1/3}$ , and  $h(x) = x^{1/2}$ . Perform the indicated operation.**

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|-------------------------|-------------------------|
| 7. $f(x) \cdot g(x)$    | 8. $f(x) \cdot h(x)$    |
| 9. $h(x) \cdot g(x)$    | 10. $\frac{f(x)}{g(x)}$ |
| 11. $\frac{f(x)}{h(x)}$ | 12. $\frac{h(x)}{g(x)}$ |

**Let  $f(x) = 2x^2 - x$ ,  $g(x) = x^{-1/2}$ , and  $h(x) = \frac{x-1}{3}$ . Perform the indicated operation and state the domain.**

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|---------------|---------------|
| 13. $f(g(x))$ | 14. $g(h(x))$ |
| 15. $f(h(x))$ | 16. $g(f(x))$ |
| 17. $h(f(x))$ | 18. $g(g(x))$ |

**State whether or not the following statements are always true. If they are false, give an example.**

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|-----------------------------------------|---------------------------------------------|
| 19. $f(x) + g(x) = g(x) + f(x)$         | 20. $f(x) - g(x) = g(x) - f(x)$             |
| 21. $f(x) \cdot g(x) = g(x) \cdot f(x)$ | 22. $\frac{g(x)}{f(x)} = \frac{f(x)}{g(x)}$ |
| 23. $f(g(x)) = g(f(x))$                 | 24. $f(f(x)) = [f(x)]^2$                    |

**Find functions  $f$  and  $g$  such that  $h(x) = f(g(x))$ .**

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|----------------------------|--------------------------|-------------------------------------|
| 25. $h(x) = \sqrt[3]{x+1}$ | 26. $h(x) = x^{3/2} + 2$ | 27. $h(x) = \frac{x}{x^2 - 2x + 1}$ |
|----------------------------|--------------------------|-------------------------------------|

- 28. End of Year Sale** A department store is holding its annual end of the year sale where items are discounted 30%. In addition, a flyer was included in the newspaper with a coupon for \$10 off any purchase. Also, if you open a charge account with the store, you can receive an additional 10% discount. There are six different ways in which these price reductions can be composed. Find all six compositions. Which of the six compositions is the store most likely to use?