Answers to Even Exercises p. 446

30. $f(g(x)) = \dfrac{7x + 9}{x + 3}; x \neq -3$

32. $f(h(x)) = -4x^2 - 5; D : (-\infty, \infty)$

34. (a) $f(x) = 7x$

   (b) $g(f(x)) = \dfrac{7x}{453.6} = \dfrac{x}{64.8}$

   (c) $64{,}800 \, ft^3$

40. $(f \circ g)(3) = f(g(3)) = f(4) = 2$

42. $f(g(2)) = f(2) = 0$

44. The sum of two linear functions is also a linear function since exponents do not change when you're adding. The product of two linear functions will likely be a quadratic function; unless one of the linear functions is a constant function ($f(x) = a$).

46. F

48. 15

50. $g(f(x)) = \begin{cases} 9x^2 + 48x + 64, & x < 0 \\ 15x + 42, & x \geq 0 \end{cases}$