



DISCOVERY • DISCUSSION

- 58. Compound Interest** A savings account earns 5% interest compounded annually. If you invest x dollars in such an account, then the amount $A(x)$ of the investment after one year is the initial investment plus 5%; that is,

$$A(x) = x + 0.05x = 1.05x$$

Find

$$A \circ A, \quad A \circ A \circ A \quad \text{and} \quad A \circ A \circ A \circ A$$

What do these compositions represent? Find a formula for what you get when you compose n copies of A .

- 59. Composing Linear Functions** The graphs of the functions

$$f(x) = m_1x + b_1$$

and

$$g(x) = m_2x + b_2$$

are lines with slopes m_1 and m_2 , respectively. Is the graph of $f \circ g$ a line? If so, what is its slope?

- 60. Solving an Equation for an Unknown Function** Suppose that

$$g(x) = 2x + 1 \quad \text{and} \quad h(x) = 4x^2 + 4x + 7$$

Find a function f such that $f \circ g = h$. (Think about what operations you would have to perform on the formula for g to end up with the formula for h .)

Now suppose that

$$f(x) = 3x + 5 \quad \text{and} \quad h(x) = 3x^2 + 3x + 2$$

Use the same sort of reasoning to find a function g such that $f \circ g = h$.