Name

# 3-1 Lesson Master

**Questions on SPUR Objectives**
See Student Edition pages 216–219 for objectives.

## SKILLS Objective B

**In 1–4, let $r$ and $s$ be defined by $r(x) = 4 \cdot 2^x$ and $s(x) = 3 \cdot 4^x$. Find an equation for**

1. $r + s$. _____

2. $r - s$. _____

3. $r \cdot s$. _____

4. $\frac{r}{s}$. _____

5. If $f(x) = \frac{x+2}{x-1}$ and $g(x) = \sqrt{2x-1}$, what is the domain of $f \cdot g$?

_____

6. Let $p$ and $q$ be sequences defined for $n \geq 1$ by $p_n = 3n^3 - 3n$ and $q_n = n + 1$. Find an explicit formula for $\left(\frac{q}{p}\right)_n$. _____

## USES Objective J

**In 7 and 8, use this information. Suki wants to take a bath. When she turns the faucet all the way on, the water level in her tub rises at a rate of 1.75 inches per minute. However, she has a leaky plug that causes the water level to fall at a rate of 0.2 inches per minute.**

7. a. Find formulas for $r(t)$, the number of inches the faucet has caused the water level to rise after $t$ minutes, and $f(t)$, the number of inches the leaky plug has caused the water level to fall after $t$ minutes. _____

_____

b. Use your answer to Part a to find a formula for $h(t)$, the height of the water after $t$ minutes.

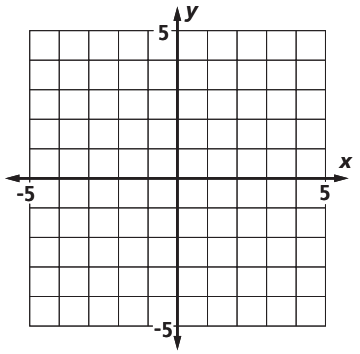
_____

8. a. How long will it take for the water level to reach 10 inches? _____

b. After she turns off the water, how long will Suki have to soak before the water level falls to 5 inches? _____

## REPRESENTATIONS Objective L

9. On the axes at the right, sketch a graph of each function over the domain $-5 \leq x \leq 5$. Be sure to label each curve.




a. the function $g$ with equation $g(x) = x^2 - 1$

b. the function $h$ with equation $h(x) = -\frac{1}{2}x + 3$

c. $g + h$

d. $h - g$