b. Show that the factored form and the original form are identical by using your graphing calculator to compare the GRAPH of each expression. Graphing will be explained in Chapter 3.

85. Factor the general expression $vt - \frac{1}{2}at^2$.

86. Suppose we alter the expression from Exercise 85 by adding a constant:

$$s + vt - \frac{1}{2}at^2$$

Experiment with different values of s, v, and t. Which ones give you an expression that is easy to factor? (Reread Exercise 87 in Section 1.3. The s we have added could represent the original position of the object.)

87. *Mathematics in Writing:* Write a short paragraph explaining the differences in the techniques you used to factor the scientific expressions in Exercise 83 parts a, b, and c. Find at least one other problem in this problem set that uses a technique similar to each of the three you have described.

1.5 Rational Expressions

Much of the terminology and many of the techniques for the arithmetic of fractions carry over to **algebraic fractions**, which are the quotients of algebraic expressions. In particular, we refer to a quotient of two polynomials as a **rational expression.**

Notation

Any symbol used as a divisor in this text is always assumed to be different from zero.

Therefore, we will not always identify a divisor as being different from zero unless it disappears through some type of mathematical manipulation.

Our objective in this section is to review the procedures for adding, subtracting, multiplying, and dividing rational expressions. We are then able to convert a complicated fraction, such as

$$\frac{1 - \frac{1}{x}}{\frac{1}{x^2} + \frac{1}{x}}$$

into a form that simplifies evaluation of the fraction and facilitates other operations with it.