### Preliminaries and Objectives

**Multiplying and Dividing Fractions**

- Factor polynomials
- Reduce fractions

**Objectives**
- Multiply and divide fractions

### Dividing Fractions

\[
\frac{x^2 + 2x}{3x - 1} \div \frac{x^2 + 6x + 8}{3x^2 + 8x - 3}
\]

### Example 1

\[
\frac{x + 1}{x - 4} \div \frac{5}{x^2 - 1} = \frac{5}{x + 1} \div \frac{5}{x - 1} = \frac{5}{x - 1}(x - 1)
\]

\[
\frac{x^2 + 2x}{3x - 1} \div \frac{3x^2 + 8x - 3}{x^2 + 6x + 8} = \frac{x(x + 2)}{3x - 1} \div \frac{3(x - 1)(x + 3)}{(x + 2)(x + 4)} = \frac{x(x + 3)}{(x + 4)}
\]

### Recap

- Factor numerators and denominators
- Multiply numerators; multiply denominators in factored form
- Reduce fractions by cancelling common factors
- Division is multiplication by the reciprocal