

### 8.6 Factoring Polynomials of the Form

$$ax^2 + bx + c$$

Steps for factoring: "Slide-and-Divide"

1. Multiply your new  $a \cdot c$  (slide)
2. Find factors of  $a \cdot c$  that add or subtract to  $b$   
**(if  $a \cdot c$  is positive, they add,  
if  $a \cdot c$  is negative, they subtract)**
3. Create factor groups  $(x \pm \underline{\quad})(x \pm \underline{\quad})$
4. Divide factors by  $a$  and simplify.
5. Move denominators in front of  $x$ .

Steps for factoring: "Slide-and-Divide"

1. Multiply your new  $a \cdot c$  (slide)
2. Find factors of  $a \cdot c$  that add or subtract to  $b$
3. Create factor groups  $(x \pm \underline{\quad})(x \pm \underline{\quad})$
4. Divide factors by  $a$  and simplify.
5. Move denominators in front of  $x$ .

$$2x^2 + 11x + 5$$

$$\left(x + \frac{10}{2}\right)\left(x + \frac{1}{2}\right)$$

$$(x+5)(2x+1)$$

$$\begin{array}{r} 10 \\ \times \\ 10 \\ + \\ 1 \\ \hline 11 \end{array}$$

Dec 2-7:00 PM

Nov 11-1:53 PM

Factor

$$3x^2 - 4x - 7$$

$$\left(x + \frac{3}{3}\right)\left(x - \frac{7}{3}\right)$$

$$(x+1)(3x-7)$$

$$\begin{array}{r} -21 \\ \times \\ -7 \\ + \\ 3 \\ \hline -14 \end{array}$$

Dec 2-7:35 PM

Factor

$$8x^2 - 14x + 3$$

$$\left(x - \frac{12}{8}\right)\left(x - \frac{2}{8}\right)$$

$$\left(x - \frac{3}{2}\right)\left(x - \frac{1}{4}\right)$$

$$(2x-3)(4x-1)$$

$$\begin{array}{r} 24 \\ \times \\ -12 \\ -2 \\ \hline -14 \end{array}$$

Nov 11-1:53 PM

Factor

$$2x^2 - 9x - 35$$

$$\left(x + \frac{5}{2}\right)\left(x - \frac{14}{2}\right)$$

$$(2x+5)(x-7)$$

$$\begin{array}{r} -70 \\ \times \\ -14 \\ + \\ 5 \\ \hline -9 \end{array}$$

Nov 17-1:00 PM

### Factor Completely!

Steps for factoring:

- STEP 1: Find GCF and divide it out.  
STEP 2: "Slide-and-Divide"

$$\frac{6x^2}{2} - \frac{2x}{2} - \frac{8}{2}$$

$$2(3x^2 - x - 4)$$

$$2\left(x + \frac{3}{3}\right)\left(x - \frac{4}{3}\right)$$

$$2(x+1)(3x-4)$$

$$\begin{array}{r} 12 \\ \times \\ -4 \\ + \\ 3 \\ \hline -1 \end{array}$$

Dec 2-7:20 PM

Factor

$$\frac{6x^2}{3} + \frac{21x}{3} - \frac{12}{3}$$

$$3(2x^2 + 7x - 4)$$

$$3\left(x + \frac{8}{2}\right)\left(x - \frac{1}{2}\right)$$

$$3(x+4)(2x-1)$$

~~$$\begin{array}{r} -8 \\ 8 \times -1 \\ \hline 7 \end{array}$$~~

Nov 11-1:55 PM

Factor

$$\frac{20x^2}{5} - \frac{45x}{5} + \frac{10}{5}$$

$$5(4x^2 - 9x + 2)$$

$$5\left(x - \frac{1}{4}\right)\left(x - \frac{8}{4}\right)$$

$$5(4x-1)(x-2)$$

~~$$\begin{array}{r} 8 \\ -8 \times -1 \\ \hline -9 \end{array}$$~~

Dec 2-7:35 PM

Solve for x.

$$3x^2 + x - 14 = 0$$

$$\left(x + \frac{7}{3}\right)\left(x - \frac{6}{3}\right) = 0$$

$$(3x+7)(x-2) = 0$$

$$3x+7=0 \text{ or } x-2=0$$

$$x = -\frac{7}{3} \text{ or } 2$$

~~$$\begin{array}{r} +12 \\ -6 \times 7 \\ \hline 1 \end{array}$$~~

Nov 30-12:53 PM

Solve for x.

$$2x^2 - 15x + 18 = 0$$

$$\left(x - \frac{12}{2}\right)\left(x - \frac{3}{2}\right) = 0$$

$$(x-6)(2x-3) = 0$$

$$x-6=0 \text{ or } 2x-3=0$$

$$x=6 \text{ or } \frac{3}{2}$$

~~$$\begin{array}{r} 36 \\ -12 \times -3 \\ \hline -15 \end{array}$$~~

May 2-12:41 PM

Solve for x.

$$4x^2 - 21x = 18$$

$$4x^2 - 21x - 18 = 0$$

$$\left(x + \frac{3}{4}\right)\left(x - \frac{24}{4}\right) = 0$$

$$(4x+3)(x-6) = 0$$

$$x = -\frac{3}{4} \text{ or } 6$$

~~$$\begin{array}{r} -72 \\ 3 \times -24 \\ \hline -21 \end{array}$$~~

May 2-12:43 PM

Find the zeros.

$$f(x) = 3x^2 - 2x - 5$$

$$0 = 3x^2 - 2x - 5$$

$$0 = \left(x + \frac{3}{3}\right)\left(x - \frac{5}{3}\right)$$

$$0 = (x+1)(3x-5)$$

$$x = -1 \text{ or } \frac{5}{3}$$

~~$$\begin{array}{r} +5 \\ 3 \times -5 \\ \hline -2 \end{array}$$~~

May 2-12:43 PM

Classwork: p.538 #4 -36 even, 42

## Final Five

Solve for x.

$$2x^2 - 13x - 7 = 0$$

Dec 2-7:20 PM