

Factoring $ax^2 + bx + c$

Ex: $4x^2 - 19x - 5$

$$\frac{4x^2}{4} + \frac{1x}{4} - \frac{20x}{5} - \frac{5}{5}$$

$$\frac{x(4x+1)}{(4x+1)} - \frac{5(4x+1)}{(4x+1)}$$

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

$$a \cdot c = 4(-5)$$

$$\begin{array}{r} -20 \\ \hline +1, -20 \\ \hline 1 \cdot 20 \\ 2 \cdot 10 \\ 4 \cdot 5 \end{array}$$

Ex: $3x^2 - 8x + 5$

$$\frac{3x^2}{x} - \frac{5x}{x} - \frac{3x}{x} + \frac{5}{1}$$

$$x(3x-5) - 1(3x-5)$$

$$(x-1)(3x-5)$$

$$3 \cdot 5 = 15$$

$$\begin{cases} 1 \cdot 15 \\ 3 \cdot 5 \\ -5, -3 \end{cases}$$

Ex: $11x^2 - 19x - 6$

$$\frac{11x^2}{11} + \frac{3x}{11} - \frac{22x}{11} - \frac{6}{11}$$

$$x(11x+3) - 2(11x+3)$$

$$(11x+3)(x-2)$$

$$\frac{-66}{11}$$

$$1 \cdot 66$$

$$2 \cdot 33$$

$$+3 \cdot 22$$

$$6 \cdot 11$$

Review for Test Thursday

1. Solve by factoring.

$$x^2 - 5x - 24 = 0$$

$\frac{-24}{1 \cdot 24}$
 $\frac{2 \cdot 12}{3 \cdot 8} + 3 - 8$
 $\frac{4 \cdot 6}{4 \cdot 6}$

$$(x - 8)(x + 3) = 0$$

$$x - 8 = 0$$

$$\frac{+8 \quad +8}{x = 8}$$

$$x + 3 = 0$$

$$\frac{-3 \quad -3}{x = -3}$$

2. Factor $t^2 - 8t + 12$

$\frac{12}{1 \cdot 12}$
 $\frac{2 \cdot 6}{2 \cdot 6}$
 $\frac{3 \cdot 4}{3 \cdot 4}$

$$(t - 2)(t - 6)$$

3. Factor $x^2 - 81$

$\frac{-81}{1 \cdot 81}$
 $\frac{3 \cdot 27}{3 \cdot 27}$
 $\frac{9 \cdot 9}{9 \cdot 9}$

$$(x + 9)(x - 9)$$

$$*x^2 + 0x - 81$$

4. Factor

$$4x^2 + 12x + 9$$

$$(2x + 3)^2$$

5. $\frac{a^2 - a + 4a - 4}{\frac{a}{a} \cdot \frac{a}{a} + \frac{4a}{4} - \frac{4}{4}}$

$$a(a - 1) + 4(a - 1)$$

$$(a - 1)(a + 4)$$

6. $\frac{24m^5}{8m^3} + \frac{16m^4}{8m^3} - \frac{8m^3}{8m^3}$

$$8m^3(3m^2 + 2m - 1)$$

Review.

$$\frac{5x^3 + 2x^2 - x}{+ 5x^3 + 3x^2} - 2$$

$$1. (5x^3 + 2x^2 - x) + (5x^3 + 3x^2 - 2)$$

$$10x^3 + 5x^2 - x - 2$$

$$2. (7t^5 + 2t^3 - t^2) - (3t^5 - 4t^4 + 3t^2)$$

$$\begin{array}{r} 7t^5 + 2t^3 - t^2 \\ -3t^5 + 4t^4 - 3t^2 \\ \hline 4t^5 + 4t^4 + 2t^3 - 4t^2 \end{array}$$

$$3. -x(2x + 3)$$

$$-2x^2 - 3x$$

$$5. (5d + 2)(5d - 2)$$

$$5d \cdot 5d + 5d(-2) + 2 \cdot 5d + 2(-2)$$

$$25d^2 - 10d + 10d - 4$$

$$25d^2 - 4$$

$$4. (2y - 9)(y + 5)$$

$$2y(y + 5) - 9(y + 5)$$

$$2y \cdot y + 2y \cdot 5 - 9 \cdot y - 9 \cdot 5$$

$$2y^2 + 10y - 9y - 45$$

$$2y^2 + 1y - 45$$

$$6. (3x + 2)^2$$

$$(3x + 2)(3x + 2)$$

$$3x \cdot 3x + 3x \cdot 2 + 2 \cdot 3x + 2 \cdot 2$$

$$9x^2 + 6x + 6x + 4$$

$$9x^2 + 12x + 4$$

p. 472

$$\#25, \quad (x+2)(x-2) = x^2 - 4$$

-3	$(-3+2)(-3-2) = (-1)(-5) = 5$	$(-3)^2 - 4 = 9 - 4 = 5 \checkmark$
-2	$(-2+2)(-2-2) = (0)(-4) = 0$	$(-2)^2 - 4 = 4 - 4 = 0 \checkmark$
-1	$(-1+2)(-1-2) = (1)(-3) = -3$	$(-1)^2 - 4 = 1 - 4 = -3 \checkmark$
0	$(0+2)(0-2) = (2)(-2) = -4$	$(0)^2 - 4 = 0 - 4 = -4 \checkmark$
1	$(1+2)(1-2) = (3)(-1) = -3$	$(1)^2 - 4 = 1 - 4 = -3 \checkmark$
2	$(2+2)(2-2) = (4)(0) = 0$	$(2)^2 - 4 = 4 - 4 = 0 \checkmark$
3	$(3+2)(3-2) = 5(1) = 5$	$(3)^2 - 4 = 9 - 4 = 5 \checkmark$

$$\#37, \quad \frac{3s^2}{3} - \frac{6s}{3} + \frac{3}{3}$$

$$3(s^2 - 2s + 1)$$

$$3(s-1)(s-1)$$

Factor:

$$1. \frac{x^3}{x^2} + \frac{3x^2}{x^2}$$

$$x^2(x+3)$$

$$2. \frac{a(x+1)}{x+1} + \frac{b(x+1)}{x+1}$$

$$(x+1)(a+b)$$

$$3. \frac{4x^2 + 4x + 1}{(2x+1)^2}$$

$$4x^2 + 4x + 1 = (2x+1)^2$$

$$4x^2 + 4x + 1 = 4x^2 + 2x + 2x + 1$$

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

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

$$4. x^2 - 14x + 40 = 0$$

$$(x-4)(x-10) = 0$$

$$x-4=0 \quad x-10=0$$

$$x=4 \quad x=10$$

$$\begin{array}{r} 40 \\ \underline{1 \cdot 40} \\ 2 \cdot 20 \\ \boxed{4 \cdot 10} \\ \underline{5 \cdot 8} \end{array}$$

STUDY ISLAND

Name. Last @ fsw

Focus #s