

Factor

$$a. \frac{3x^2}{3x} - \frac{9x}{3x} = 3x(x-3)$$

$$b. \frac{18b^3}{9b} - \frac{36b^2}{9b} - \frac{9b}{9b} - \frac{9}{9} = -1.1$$

$$9b(2b^2 - 4b - 1) \quad \frac{b}{b}$$

$$c. \frac{xy}{xy} - \frac{2x^2y}{xy} + \frac{xy^3}{xy}$$

$$xy(1 - 2x + y^2)$$

$$* d. \frac{a(b+4)}{(b+4)} + \frac{c(b+4)}{(b+4)}$$

$$(b+4)(a+c)$$

$$a(b+4) + c(b+4)$$

$$(a+c)(b+4)$$

$$e. \quad \frac{a(\cancel{x-3})}{(\cancel{x-3})} + \frac{b(\cancel{x-3})}{(\cancel{x-3})}$$

$$(x-3)(a+b)$$

$$f. \quad \frac{7x(x-1)}{(x-1)} + \frac{1(x-1)}{\cancel{(x-1)}}$$

$$(x-1)(\underbrace{7x+1})$$

Factor by grouping.

$$a. \quad \underbrace{\frac{mn}{m} + \frac{mp}{m}} + \underbrace{\frac{5n}{5} + \frac{5p}{5}} \quad \checkmark$$

$$\frac{\cancel{m}(n+p)}{(n+p)} + 5 \frac{\cancel{(n+p)}}{(n+p)}$$

$$(n+p)(m+5) \quad \checkmark$$

$$b. \quad \underbrace{\frac{ax}{x} + \frac{bx}{x}} + \underbrace{\frac{ay}{y} + \frac{by}{y}}$$

$$\frac{x(a+b)}{(a+b)} + \frac{y(a+b)}{(a+b)}$$

$$(a+b)(x+y)$$

$$c. \quad \frac{ax + bx}{x} - \frac{ay - by}{-y}$$

$$\frac{x(a+b)}{(a+b)} - \frac{y(a+b)}{(a+b)}$$

$$(a+b)(x-y)$$

$$d. \quad \frac{2cd - 1c}{c} + \frac{3d^2 + 3}{-3}$$

$$c(2d-1) - 3(2d-1)$$

$$(2d-1)(c-3)$$

$$e. \quad \frac{2m^2}{m} + \frac{3m}{m} - \frac{10m}{-5} - \frac{15}{-5}$$

$$m(2m + 3) - 5(2m + 3)$$

$$(2m + 3)(m - 5)$$

$$\frac{\cancel{m} \cdot m}{\cancel{m}}$$

Sec. 9.7 Factoring Quadratic Trinomials

Factor $ax^2 + bx + c \rightarrow a \cdot c$

a. $3x^2 + 4x - 15$ $3 \cdot -15$

pair that adds up to this number -45

Replace with this pair

-45
$1 \cdot 45$
$3 \cdot 15$
$-5 \cdot 9$

$$3x^2 + 4x - 15$$

$$\begin{array}{|c|c|c|c|} \hline 3x^2 & -5x & +9x & -15 \\ \hline x & x & 3 & 3 \\ \hline \end{array}$$

$$x(3x-5) + 3(3x-5)$$

$$(3x-5)(x+3)$$

HW: p. 450 (29-57) odd