

$$\boxed{\text{Ex 6}} \quad (3p^2 - 4p + 1)(p^3 + 2p - 8) =$$

$$= 3p^5 + 6p^3 - 24p^2$$

$$- 4p^4 \quad - 8p^2 + 32p$$

$$+ \quad \quad \quad p^3 \quad \quad \quad 2p - 8$$


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$$= 3p^5 - 4p^4 + 7p^3 - 32p^2 + 34p - 8$$

63, 55

$$\boxed{\text{Ex 7 c}}$$

$$r^2 \left\{ (3r+2)(3r-2) \right.$$

$$\left. \begin{array}{l} 9r^2 - 6r + 6r - 4 \end{array} \right\}$$

$$r^2 (9r^2 - 4)$$

$$\boxed{9r^4 - 4r^2}$$

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### Special Products

$$(x+y)(x-y) = x^2 - y^2 \quad \text{Difference of squares}$$

Square of a binomial

$$(x+y)^2 = x^2 + 2xy + y^2$$

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

**Ex 8**

$$\begin{aligned} \text{(a)} \quad (3p+11)(3p-11) &= 9p^2 - 33p + 33p - 121 \\ &= \boxed{9p^2 - 121} \quad \text{Dif of Squares} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad (9k - 11r^3)(9k + 11r^3) \\ &= \boxed{81k^2 - 121r^6} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad (2m+5)^2 &= (2m+5)(2m+5) \\ &= 4m^2 + 10m + 10m + 25 \\ &= \boxed{4m^2 + 20m + 25} \end{aligned}$$

69, 71, 73, 75

# Unit 4 R4 Factoring

①

**Ex 1** Factor out Greatest Common Factor

$$(a) \frac{9y^5}{y^2} + \frac{y^2}{y^2} = \boxed{y^2(9y^3 + 1)}$$

$$(b) \frac{6x^2t}{2t} + \frac{8xt}{2t} - \frac{12t}{2t} = \boxed{2t(3x^2 + 4 - 6)}$$

$$(c) \frac{14(m+1)^3}{7(m+1)} - \frac{28(m+1)^2}{7(m+1)} - \frac{7(m+1)}{7(m+1)}$$

$$= 7(m+1)(2(m+1)^2 - 4(m+1) - 1)$$

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**Ex 2** Factor by Grouping

$$(a) \left. \frac{mp^2}{m} + \frac{7m}{m} \right\} + \left. \frac{3p^2}{3} + \frac{21}{3} \right\}$$

$$= \underline{m(p^2 + 7)} + \underline{3(p^2 + 7)} = \boxed{(p^2 + 7)(m + 3)}$$

$$(c) \left. \frac{4x^3}{2x^2} + \frac{2x^2}{2x^2} \right\} \left. \frac{-2x-1}{-1} \frac{-1}{-1} \right\}$$

$$= \underline{\frac{2x^2(2x+1)}{2x+1}} - \underline{\frac{1(2x+1)}{2x+1}} = \boxed{(2x+1)(2x^2-1)}$$

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**Ex 3** Factoring trinomials

$$a=4 \quad b=-11 \quad c=6$$

$$(a) \quad 4y^2 - 11y + 6$$

$ac$	$b$
$24$	$-11$
$(-8)(-3)$	$-8 + -3 = -11$

$$\frac{4y^2}{4y} - \frac{8y}{4y} \left| -\frac{3y}{-3} + \frac{6}{-3} \right.$$

$$4y(y-2) - 3(y-2) = (y-2)(4y-3)$$


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$$(d) \quad \frac{16y^3}{8y} + \frac{24y^2}{8y} - \frac{16y}{8y}$$

GCF

$$a=2 \quad b=3 \quad c=-2$$

$$8y \left( 2y^2 + 3y - 2 \right)$$

$$\frac{2y^2}{2y} + \frac{4y}{2y} \left| -\frac{y}{-1} - \frac{2}{-1} \right.$$

$$2y(y+2) - 1(y+2)$$

$8y(y+2)(2y-1)$

$ac$	$b$
$-4$	$3$
$4(-1)$	$4-1 = 3$