

## Quiz Solutions:

$$1. 7x^3 + 8x^2 - 6x - 7$$

$$2. 7x^3 + 2x^2 - 2x + 1$$

$$3. -15x^4 + 22x^3 + 12x^2 - 16x$$

$$4. Q: 3x - 5; R: 9$$

$$5. f(-2) = -4$$

5.6

### Special Factoring

$$a^2 - b^2 = (a+b)(a-b)$$

$$a^2 + 2ab + b^2 = (a+b)(a+b) = (a+b)^2$$

$$a^2 - 2ab + b^2 = (a-b)(a-b) = (a-b)^2$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

Quiz # 6 solutions :

1.  $4x^3 - 8x^2 - 5x + 7$
2.  $7x^3 + 8x^2 - 2x - 7$
3.  $12x^4 - 7x^3 - 26x^2 + 20x$
4. Q:  $2x - 1$  ; R:  $3$
5.  $f(-2) = -12$

5.6  
12.  $a^2b^2 - 25$   
 $(ab)^2 - 5^2$

$(ab - 5)(ab + 5)$

42.  $64a^3 + 27$

$(4a)^3 + 3^3$   
 $(x+y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$   
 $(4a+3)((4a)^2 - (4a)(3) + 3^2)$

$(4a+3)(16a^2 - 12a + 9)$

$a^3 + b^3 \neq (a+b)^3$   
 $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

$$16. \quad 4x^2y^2 + 12xy + 9$$

$$(2xy)^2 + 2(2xy)(3) + 3^2 \quad a^2 + 2ab + b^2 = (a+b)^2$$

$$= (2xy + 3)^2$$

$$22. \quad b^2 - 18b + 81 = (b - 9)^2$$

$$b^2 - 2(b)(9) + 9^2$$

$$48. \quad 1 - 125b^3$$

$$1^3 - (5b)^3$$

$$(1 - 5b)(1^2 + (1)(5b) + (5b)^2)$$

$$(1 - 5b)(1 + 5b + 25b^2)$$

$$54. \quad 27x^3 - 8y^3$$

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

$$(3x - 2y)(9x^2 + 6xy + 4y^2)$$

$$58. a^3 + (a+b)^3$$

$$(a + a+b)(a^2 - a(a+b) + (a+b)^2)$$

$$(2a+b)(a^2 - a^2 - ab + a^2 + 2ab + b^2)$$

$$(2a+b)(a^2 + ab + b^2)$$

$$(a+b)^2 = (a+b)(a+b)$$

$$60. x^{3n} + y^{3n}$$

$$(x^n)^3 + (y^n)^3$$

$$(x^n + y^n)(x^{2n} - x^n y^n + y^{2n})$$

$$86. \quad 3x^4 - 81x = 3x(x^3 - 27)$$

$$= 3x(x-3)(x^2 + 3x + 9)$$

$$102. \quad 4x^3 + 8x^2 - 9x - 18$$

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

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

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

$$108. \quad 8x^4 - 40x^3 + 50x^2$$

$$2x^2(4x^2 - 20x + 25)$$

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

$$2x^2(2x-5)^2$$

$$a^2 - 2ab + b^2 =$$

$$(a-b)(a-b)$$

$$= (a-b)^2$$

$$120. \quad 24a^2b^2 - 14ab^3 - 90b^4$$

$$2b^2(12a^2 - 7ab - 45b^2)$$

$$2b^2(\underbrace{12a^2 - 27ab + 20ab - 45b^2}_{12 \cdot (-45)})$$

$$2b^2[3a(4a - 9b) + 5b(4a - 9b)]$$

$12 \cdot (-45)$   
 $3 \cdot 4 \cdot 5 \cdot 9$   
 $3 \cdot 2 \cdot 2 \cdot 5 \cdot 3 \cdot 3$

$$= 2b^2(4a - 9b)(3a + 5b)$$

$$126. \quad \underbrace{4x^4 - x^2}_{(2x)^2 - 1^2} - \underbrace{4x^2y^2 + y^2}_{(2x)^2 - 1^2}$$

$$x^2(4x^2 - 1) - y^2(4x^2 - 1)$$

$$(4x^2 - 1)(x^2 - y^2)$$

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

$$\begin{aligned}
 128. \quad & \underbrace{x^6 y^3 + x^3 - x^3 y^3 - 1}_{x^3(x^3 y^3 + 1) - 1(x^3 y^3 + 1)} \\
 & (x^3 y^3 + 1)(x^3 - 1) \\
 & (x+1)(x^2 - xy + 1)(x-1)(x^2 + x + 1)
 \end{aligned}$$

$$\begin{aligned}
 80. \quad & 3x^4 + 20x^2 + 32 \quad \begin{array}{l} 3 \cdot 32 \\ 3 \cdot 8 \cdot 4 \\ (3 \cdot 4) \cdot 8 \end{array} \\
 & \underbrace{3x^4 + 12x^2 + 8x^2 + 32}_{3x^2(x^2 + 4) + 8(x^2 + 4)} \\
 & (x^2 + 4)(3x^2 + 8)
 \end{aligned}$$

$$\begin{aligned}
 132. \quad & 3b^{n+2} + 4b^{n+1} - 4b^n \\
 & b^n (3b^2 + 4b - 4) \quad \begin{array}{l} 3(-4) \\ = (b)(-2) \end{array} \\
 & b^n (3b^2 + 6b - 2b - 4) \\
 & b^n [3b(b+2) - 2(b+2)] \\
 & = b^n (b+2)(3b-2)
 \end{aligned}$$

5.6  
#3-131  
odd