

Factor each equation below. Your work should be on separate paper.

1.  $2x^3 + 6x^2$   $\cancel{2}CF = 2x^2$

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

2.  $x^3 - 16x$   $\cancel{2}CF = x$

$x(x^2 - 16)$  ← diff. of squares

$$x(x-4)(x+4)$$

3.  $2x^4 + 10x^2 - 48$   $\cancel{2}CF = 2$

$2(x^4 + 5x^2 - 24)$  sum 5 | prod. -24  
8+3 | 8·-3

$$2(x^2+8)(x^2-3)$$

4.  $x^4 - 4x^2 - 96$  sum -4 | prod. -96

$$(x^2-12)(x^2+8)$$

-12+8 | -12·8  
-12 8  
1 1

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

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

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

6.  $8x^3 - 1$   $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$   
 $(2x)^3 (1)^3$

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

7.  $(x^3 + 3x^2) - 18x - 54$

$x^2(x+3) - 18(x+3)$

$$(x+3)(x^2-18)$$

8.  $x^3 + 27$   $a^3 + b^3 = (a+b)(a^2 - ab + b^2)$   
 $(x)^3 (3)^3$

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

9.  $4x^3 + x^2$   $\cancel{2}CF = x^2$

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

10.  $2x^4 - 26x^2 + 72$   $\cancel{2}CF = 2$

$2(x^4 - 13x^2 + 36)$  sum -13 | prod. 36

$2(x^2-4)(x^2-9)$  -4+9 | -4·9

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

-4 9  
1 1