

Name _____

Factoring Review

- ① Completely factor each polynomial
 ② Determine all of the related roots of the polynomial

<u>Polynomial</u>	<u>Completely factored form</u>	<u>Roots</u>
① $3x^2 + 3x - 18 = 0$ $3(x^2 + x - 6)$	$3(x+3)(x-2) = 0$	$x = -3$ $x = 2$
② $x^3 - x^2 - 6x = 0$ $x(x^2 - x - 6)$	$x(x-3)(x+2) = 0$	$x = 3$ $x = -2$ $x = 0$
③ $-3x^2 - 3x + 18 = 0$ $-3(x^2 + x - 6)$	$-3(x+3)(x-2) = 0$	$x = -3$ $x = 2$
④ $x^2 + x - 6 = 0$	$(x+3)(x-2) = 0$	$x = -3$ $x = 2$
⑤ $-4x^2 - 16x - 12 = 0$ $-4(x^2 + 4x + 3)$	$-4(x+1)(x+3) = 0$	$x = -1$ $x = -3$
⑥ $x^2 - x = 0$	$x(x-1) = 0$	$x = 0$ $x = 1$
⑦ $-4x - 16 = 0$	$-4(x+4) = 0$	$x = -4$
⑧ $-2x - 6 = 0$	$-2(x+3) = 0$	$x = -3$
⑨ $x^3 - 9x = 0$ $x(x^2 - 9)$	$x(x-3)(x+3) = 0$	$x = 0$ $x = 3$ $x = -3$
⑩ $3x^2 - 6x - 9 = 0$ $3(x^2 - 2x - 3)$	$3(x-3)(x+1) = 0$	$x = 3$ $x = -1$
⑪ $3x^2 - 12x = 0$	$3x(x-4)$	$x = 0$ $x = 4$
⑫ $x^2 - 2x - 3 = 0$	$(x-3)(x+1)$	$x = 3$ $x = -1$

$$\textcircled{13} \quad x^3 - 16x = 0$$
$$x(x^2 - 16)$$

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

$$x = 0$$
$$x = 4$$
$$x = -4$$

$$\textcircled{14} \quad -4x^2 + 4x + 24 = 0$$
$$-4(x^2 - x - 6)$$

$$-4(x-3)(x+2)$$

$$x = 3$$
$$x = -2$$

$$\textcircled{15} \quad x^2 + 2x = 0$$

$$x(x+2)$$

$$x = 0$$
$$x = -2$$

$$\textcircled{16} \quad -4x + 8 = 0$$

$$-4(x-2)$$

$$x = 2$$

$$\textcircled{17} \quad 2x + 6 = 0$$

$$2(x+3)$$

$$x = -3$$

$$\textcircled{18} \quad 2x^2 + 10x + 12$$
$$2(x^2 + 5x + 6)$$

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

$$x = -2$$
$$x = -3$$

$$\textcircled{19} \quad x^2 + 3x + 2$$

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

$$x = -2$$
$$x = -1$$