

Factoring: All Techniques Combined (Hard)

Date _____ Period _____

Factor each.

1) $x^3 - 5x^2 - x + 5$

2) $x^4 - 2x^2 - 15$

3) $x^6 - 26x^3 - 27$

4) $x^6 + 2x^4 - 16x^2 - 32$

5) $x^4 - 13x^2 + 40$

6) $x^9 - x^6 - x^3 + 1$

7) $x^6 - 4x^2$

8) $x^4 + 14x^2 + 45$

9) $2x^4 + x^2 - 6$

10) $2x^2 - 13x + 20$

11) $4x^3 - x^2 - 4x + 1$

12) $4x^8 - 61x^4 + 225$

13) $5x^2 + 24x - 5$

14) $5x^2 + 29x + 20$

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

16) $10x^3 - 8x^2 + 25x - 20$

17) $-64x^3 + 125 = 0$

18) $8x^4 + 10x^2 - 3$

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Factor each.

1) $x^3 - 5x^2 - x + 5$

$(x - 5)(x + 1)(x - 1)$

2) $x^4 - 2x^2 - 15$

$(x^2 - 5)(x^2 + 3)$

3) $x^6 - 26x^3 - 27$

$(x - 3)(x^2 + 3x + 9)(x + 1)(x^2 - x + 1)$

4) $x^6 + 2x^4 - 16x^2 - 32$

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

5) $x^4 - 13x^2 + 40$

$(x^2 - 5)(x^2 - 8)$

6) $x^9 - x^6 - x^3 + 1$

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

7) $x^6 - 4x^2$

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

8) $x^4 + 14x^2 + 45$

$(x^2 + 5)(x^2 + 9)$

$$9) 2x^4 + x^2 - 6$$

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

$$10) 2x^2 - 13x + 20$$

$$(2x - 5)(x - 4)$$

$$11) 4x^3 - x^2 - 4x + 1$$

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

$$12) 4x^8 - 61x^4 + 225$$

$$(2x^2 + 5)(2x^2 - 5)(x^2 + 3)(x^2 - 3)$$

$$13) 5x^2 + 24x - 5$$

$$(5x - 1)(x + 5)$$

$$14) 5x^2 + 29x + 20$$

$$(5x + 4)(x + 5)$$

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

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

$$16) 10x^3 - 8x^2 + 25x - 20$$

$$(5x - 4)(2x^2 + 5)$$

$$17) -64x^3 + 125 = 0$$

$$(4x - 5)(-16x^2 - 20x - 25) = 0$$

$$18) 8x^4 + 10x^2 - 3$$

$$(2x + 1)(2x - 1)(2x^2 + 3)$$