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|--|--|--|---|---|
| 1. $(5a + b)^2$<br>$(5a)^2 + 2(5a)b + (b)^2$<br>$25a^2 + 10ab + b^2$   | 2. $(x + 8)^2$<br>$(x)^2 + 2(x)(8) + (8)^2$<br>$x^2 + 16x + 64$  | 3. $(3x - y)^2$<br>$(3x)^2 - 2(3x)(y) + (y)^2$<br>$9x^2 - 6xy + y^2$   | 4. $(2x^2 - 3y)^2$<br>$(2x^2)^2 - 2(2x^2)(3y) + (3y)^2$<br>$4x^4 - 12x^2y + 9y^2$   | 5. $(6x^3 + 7y)^2$<br>$(6x^3)^2 + 2(6x^3)(7y) + (7y)^2$<br>$36x^6 + 84x^3y^2 + 49y^4$ |
| 6. $(2x - 1)(2x + 1)$<br>$(2x)^2 - (1)^2$<br>$4x^2 - 1$  | 7. $(x + 2y)(x - 2y)$<br>$(x)^2 - (2y)^2$<br>$x^2 - 4y^2$  | 8. $(4ax^3 - 3x^4)(4ax^3 + 3x^4)$<br>$(4ax^3)^2 - (3x^4)^2$<br>$16a^2x^6 - 9x^8$   | 9. $(2x + y)(2x - y)$<br>$(2x)^2 - (y)^2$<br>$4x^2 - y^2$   |   |
| 10. $(5x + 2y + 3z)(5x + 2y - 3z)$<br>$[(5x + 2y) + 3z][(5x + 2y) - 3z]$<br>$(5x + 2y)^2 - (3z)^2$<br>$(5x)^2 + 2(5x)(2y) + (2y)^2 - 9z^2$<br>$25x^2 + 20xy + 4y^2 - 9z^2$   | 11. $(x + 2y + z)(x - 2y - z)$<br>$[x + (2y + z)][x - (2y + z)]$<br>$(x)^2 - (2y + z)^2$<br>$x^2 - [(2y)^2 + 2(2y)(z) + (z)^2]$<br>$z^2 - 4y^2 - 4yz - z^2$  | 12. $(4x + 3y - 5z)(4x - 3y + 5z)$<br>$[4x + (3y - 5z)][4x - (3y - 5z)]$<br>$(4x)^2 - (3y - 5z)^2$<br>$16x^2 - [(3y)^2 - 2(3y)(5z) + (5z)^2]$<br>$16x^2 - 9y^2 + 30yz - 25z^2$ | 13. $(x^2 - 2x - 5)(x^2 + 2x - 5)$<br>$[(x^2 - 5) - 2x][(x^2 - 5) + 2x]$<br>$(x^2 - 5)^2 - (2x)^2$<br>$(x^2)^2 - 2(x^2)(5) + (5)^2 - (2x)^2$<br>$x^4 - 10x^2 + 25 - 4x^2$<br>$x^4 - 14x^2 + 25$ |   |
| 14. $(x^4 - 2x^2 + x^3 - x)(x^4 - 2x^2 - x^3 + x)$<br>$[(x^4 - 2x^2) + (x^3 - x)][(x^4 - 2x^2) - (x^3 - x)]$<br>$(x^4 - 2x^2)^2 - (x^3 - x)^2$<br>$[(x^4)^2 - 2(x^4)(2x^2) + (2x^2)^2] - [(x^3)^2 - 2(x^3)(x) + (x)^2]$<br>$x^8 - 4x^6 + 4x^4 - x^6 + 2x^4 - x^2$<br>$x^8 - 5x^6 + 6x^4 - x^2$ | 15. $(x^2 - xy + y^2)(x^2 + y^2 + xy)$<br>$[(x^2 + y^2) - xy][(x^2 + y^2) + xy]$<br>$(x^2 + y^2)^2 - (xy)^2$<br>$(x^2)^2 + 2(x^2)(y^2) + (y^2)^2 - (xy)^2$<br>$x^4 + 2x^2y^2 + y^4 - x^2y^2$<br>$x^4 + x^2y^2 + y^4$ | 16. $(x + 5)(x - 1)$<br>$x^2 + (5 - 1)x + (5)(-1)$<br>$x^2 + 4x - 5$   |   |   |
| 17. $(x + 1)(x + 10)$<br>$x^2 + (1 + 10)x + (1)(10)$<br>$x^2 + 11x + 10$   | 18. $(x - 3)(x - 30)$<br>$x^2 + (-3 - 30)x + (-3)(-30)$<br>$x^2 - 33x + 90$  | 19. $(x - 2)(x + 20)$<br>$x^2 + (-2 + 20)x + (-2)(20)$<br>$x^2 + 18x - 40$   | 20. $(x + 3)(x - 30)$<br>$x^2 + (3 - 30)x + (3)(-30)$<br>$x^2 - 27x - 90$   |   |
| 21. $(5x + 1)(x - 3)$<br>$(5x)(x) + [(5x)(-3) + (1)(x)] + (1)(-3)$<br>$5x^2 + [-15x + x] - 3$<br>$5x^2 - 14x - 3$  | 22. $(2x - 3)(x - 4)$<br>$(2x)(x) + [(2x)(-4) + (-3)(x)] + (-3)(-4)$<br>$2x^2 + [-8x - 3x] + 12$<br>$2x^2 - 11x + 12$  | 23. $(7x - 2)(4x - 3)$<br>$(7x)(4x) + [(7x)(-3) + (-2)(4x)] + (-2)(-3)$<br>$28x^2 + [-21x - 8x] + 6$<br>$28x^2 - 29x + 6$  |   |   |
| 24. $(x^3 - 2)(x^3 - 4)$<br>$x^6 + (-2 - 4)x^3 + (-2)(-4)$<br>$x^6 - 6x^3 + 8$   | 25. $(x^3y^3 - 5)(x^3y^3 + 3)$<br>$(x^3y^3)^2 + (-5 + 3)x^3y^3 + (-5)(3)$<br>$x^6y^6 - 2x^3y^3 - 15$   | 26. $(x + 2)^3$<br>$(x)^3 + 3(x)^2(2) + 3(x)(2)^2 + (2)^3$<br>$x^3 + 6x^2 + 12x + 8$   | 27. $(x - y)^3$<br>$(x)^3 - 3(x)^2(y) + 3(x)(y)^2 - (y)^3$<br>$x^3 - 3x^2y + 3xy^2 - y^3$   |   |
| 28. $(x + 5)^3$<br>$(x)^3 + 3(x)^2(5) + 3(x)(5)^2 + (5)^3$<br>$x^3 + 15x^2 + 75x + 125$  | 29. $(3x + 2)^3$<br>$(3x)^3 + 3(3x)^2(2) + 3(3x)(2)^2 + (2)^3$<br>$27x^3 + 54x^2 + 36x + 8$  | 30. $(x^2 - 2y)^3$<br>$(x^2)^3 - 3(x^2)^2(2y) + 3(x^2)(2y)^2 - (2y)^3$<br>$x^6 - 6x^4y + 12x^2y^2 - 8y^3$  |   |   |
| 31. $(3ax^2 - 5b^4y)^3$<br>$(3ax^2)^3 - 3(3ax^2)^2(5b^4y) + 3(3ax^2)(5b^4y)^2 - (5b^4y)^3$<br>$27a^3x^6 - 135a^2x^4b^4y + 225ax^2b^8y^2 - 125b^{12}y^3$  | 32. $(a + 2)(a^2 - 2a + 4)$<br>$(a)^3 + (2)^3$<br>$a^3 + 8$  | 33. $(5a - 6b^2)(25a^2 + 30ab^2 + 36b^4)$<br>$(5a)^3 - (6b^2)^3$<br>$125a^3 - 216b^6$  |   |   |
| 34. $(4a^2 + 3b^3)(64a^4 - 12a^2b^3 + 9b^6)$<br>No hay producto notable  | 35. $(x + 4)(x - 4)(x + 1)(x - 1)$<br>$(x^2 - 16)(x^2 - 1)$<br>$x^4 + (-15 - 1)x^2 + (-16)(-1)$<br>$x^4 - 16x^2 + 16$  | 36. $(x + 4)(x - 4)(x^2 + 16)$<br>$(x^2 - 16)(x^2 + 16)$<br>$(x^2)^2 - (16)^2$<br>$x^4 - 256$  | 37. $(a^3 - 27)(a + 3)(a^2 - 3a + 9)$<br>$(a^3 - 27)(a^3 + 27)$<br>$(a^3)^2 - (27)^2$<br>$a^6 - 729$  |   |
| 38. $(a^x - 6)(a^x + 10)$<br>$(a^x)^2 + (-6 + 10)a^x + (-6)(10)$<br>$a^{2x} + 4a^x - 60$   | 39. $(a^{x+1} - 8)(a^{x+1} + 11)$<br>$(a^{x+1})^2 + (-8 + 11)a^{x+1} + (-8)(11)$<br>$a^{2x+2} + 3a^{x+1} - 88$   |  |   |   |





$$43. (x^2 - 1 + 3x)(x^2 + 1 + 3x)$$

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

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

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

$$x^4 + 6x^3 + 9x^2 - 1$$

$$44. (x + y)(x + y)^2$$

$$(x + y)^3$$

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

$$x^3 + 3x^2y + 3xy^2 + y^3$$

$$42. (4x^2 - 1)^2 - (2x^3 + x)^2$$

$$[(4x^2)^2 - 2(4x^2)(1) + (1)^2] - [(2x^3)^2 + 2(2x^3)(x) + (x)^2]$$

$$16x^4 - 8x^2 + 1 - 4x^6 - 4x^4 - x^2$$

$$-4x^6 + 12x^4 - 9x^2 + 1$$

$$45. (x + y)(x + y) - (x - y)(x - y)$$

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

$$[(x)^2 + 2(x)(y) + (y)^2] - [(x)^2 - 2(x)(y) + (y)^2]$$

$$[x^2 + 2xy + y^2] - [x^2 - 2xy + y^2]$$

$$x^2 + 2xy + y^2 - x^2 + 2xy - y^2$$

$$4xy$$

**FACTORIZAR:**

$$1) 3x^3 - 6x^2$$

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

$$2) -12x^4 + 24x^5y$$

$$-12x^4(1 + 2xy)$$

$$5) 50xy^3z^3 - 25xyz^2 + 75x^2y^3z - 150xy^2z^2$$

$$= 25xyz(2y^2z^2 - z + 3xy^2 - 6yz)$$

$$8) 4x - 4 - 2xy + 2y$$

$$(4x - 4) - (2xy - 2y)$$

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

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

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

$$10) 4xy + 6y - 2x - 3$$

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

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

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

$$13) (2x + y)(x - 6) - (x - 6)(2x - y)$$

$$(x - 6)[(2x + y) - (2x - y)]$$

$$(x - 6)[2x + y - 2x + y]$$

$$(x - 6)(2y)$$

$$15) (x^3 + y - 1)(x^3 + 2) - (x^3 - 2)$$

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

$$(x^3 + 2)[(x^3 + y - 1) - 1]$$

$$(x^3 + 2)[x^3 + y - 1 - 1]$$

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

$$18) x^2 + 8x + 16$$

$$(x + 4)^2$$

$$23) x^2 + 4x(x + y) + 4(x + y)^2$$

$$[x + 4(x + y)]^2$$

$$[x + 4x + 4y]^2$$

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

$$25) 36 - y^2$$

$$(6 + y)(6 - y)$$

$$28) 1/81 - 81x^4/36$$

$$(1/9 - 9x^2/6)(1/9 + 9x^2/6)$$

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

$$30) a^2 - 25(a + b)^2$$

$$[a + 5(a + b)][a - 5(a + b)]$$

$$[a + 5a + 5b][a - 5a - 5b]$$

$$[6a + 5b][-4a - 5b]$$

$$20) 1 + 10x^2y + 25x^4y^2$$

$$(1 + 5x^2y)^2$$

$$33) 16x^2 - a^2 - 9m^2 + 6am$$

$$16x^2 - (a^2 - 6am + 9m^2)$$

$$16x^2 - (a - 3m)^2$$

$$[4x - (a - 3m)][4x + (a - 3m)]$$

$$[4x - a + 3m][4x + a - 3m]$$

$$35) 9x^4 + 12x^2y^2 + 3y^4$$

$$(3x^2)^2 + 4(3x^2)y^2 + 3y^4$$

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

$$40) x^2 - 14x + 48$$

$$(x - 8)(x - 6)$$

$$45) x^4 + 2x^2y - 48y^2$$

$$(x^2 + 8y)(x^2 - 6y)$$

$$50) 9a(2x + y - 3) - 3ab(2x + y - 3)$$

$$(2x + y - 3)(9a - 3ab)$$

$$(2x + y - 3)(3 - b)(3a)$$

$$53) 64x^2 + 56x - 30$$

$$2(32x^2 + 28x - 15)^{(32/32)}$$

$$2(32x + 40)(32x - 12)/32$$

$$2(8)(4x + 5)4(8x - 3)/(8 * 4)$$

$$2(4x + 5)(8x - 3)$$

$$55) -12x^2 - 10y^2 + 23xy$$

$$-(12x^2 - 23xy + 10y^2)$$

$$-(12/12)(12x^2 - 23xy + 10y^2)$$

$$-(12x - 15y)(12x - 8y)/12$$

$$-3(4x - 5y)4(3x - 2y)/(4 * 3)$$

$$-(4x - 5y)(3x - 2y)$$

$$(-4x + 5y)(3x - 2y)$$

$$58) 8x^6 - x^3 - 9$$

$$(8x^6 - x^3 - 9)^{(8/8)}$$

$$(64x^6 - 8x^3 - 72)/8$$

$$(8x^3 - 9)(8x^3 + 8)/8$$

$$(8x^3 - 9)8(x^3 + 1)/8$$

$$(8x^3 - 9)(x^3 + 1)$$

$$60) 64x^3 + 48x^2y + 12xy^2 + y^3$$

$$(4x + y)^3$$

$$63) 8 - x^3$$

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

$$65) 125x^9 + 343$$

$$(5x^3 + 7)(25x^6 - 35x^3 + 49)$$

$$68) (2x + y)^3 + 1$$

$$[(2x + y) + 1][(2x + y)^2 - (2x + y) + 1]$$

$$[2x + y + 1][4x^2 + 4xy + y^2 - 2x - y + 1]$$

$$70) (x + 2)^3 - (x - 1)^3$$

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

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

$$[3][x^2 + 4x + 4 + x^2 + x - 2 + x^2 - 2x + 1]$$

$$[3][3x^2 + 3x + 3]$$

$$[3]3[x^2 + x + 1]$$

$$6[x^2 + x + 1]$$

$$73) (x + y - z)^2 - (x + y)^2$$

$$[(x + y - z) - (x + y)][(x + y - z) + (x + y)]$$

$$[x + y - z - x - y][x + y - z^2 + x + y]$$

$$[-z^2][2x + 2y - z^2]$$

$$75) 8 + 512x^9$$

$$(2 + 8x^3)(4 - 16x^3 + 64x^6)$$

$$78) 1 - (4y^2 + x^2) + 4xy$$

$$1 - 4y^2 - x^2 + 4xy$$

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

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

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

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

$$[1 - 2y + x][1 + 2y - x]$$





Material de apoyo preparado para el curso

## MATEMÁTICA I / 2010

Problemas resueltos de PRODUCTOS NOTABLES Y FACTORIZACIÓN



80)  $2x^2 - 2y^2 + 6xy - 6y^2$

$$2x^2 + 6xy - 8y^2$$

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

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

83)  $x^4 - 256$

$$(x^2 - 16)(x^2 + 16)$$

$$(x-4)(x+4)(x^2+16)$$

85)  $(4x+y)^4 - 16$

$$[(4x+y)^2 - 4][(4x+y)^2 + 4]$$

$$[(16x^2 + 8xy + y^2) - 4][(16x^2 + 8xy + y^2) + 4]$$

$$[16x^2 + 8xy + y^2 - 4][16x^2 + 8xy + y^2 + 4]$$

$$[16x^2 + 8xy + y^2 - 4][16x^2 + 8xy + y^2 + 4]$$

88)  $4x^2 - 4(x-5)^2$

$$[2x - 2(x-5)][2x + 2(x-5)]$$

$$[2x - 2x + 10][2x + 2x - 10]$$

$$[10][4x - 10]$$

$$[10]2[2x - 5]$$

$$20[2x - 5]$$

90)  $x^4 - x^3 + 4x - 4x^2$

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

$$x^3(x-1) + 4x(1-x)$$

$$x^3(x-1) - 4x(x-1)$$

$$(x-1)(x^3 - 4x)$$

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

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

93)  $x^5 - x^3y^2 - x^2y^3 + y^5$

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

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

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

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

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

95)  $5x^6 - 320$

$$5(x^6 - 64)$$

$$5(x^2 - 4)(x^4 + 4x^2 + 16)$$

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

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

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

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

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

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

¡ ¡No al FRAUDE en la elecciones de Asociación! !



Si deseas este u otro material, descárgalo de: [www.rescate-estudiantil.com](http://www.rescate-estudiantil.com)

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