

## ΓΡΑΠΤΗ ΔΟΚΙΜΑΣΙΑ ΣΤΗΝ ΠΑΡΑΓΟΝΤΟΠΟΙΗΣΗ

Να παραγοντοποιήσετε τις παρακάτω παραστάσεις:

1.  $4x^2 - 8x = 4x(x - 2)$

2.  $9a^2 + 16 + 24a = (3a + 4)^2$

3.  $y^4 - 16 = (y^2 + 2)(y - 2)(y + 2)$

4.  $12a^2x^3 - 4a^3x^2 + 6x^2y - 2axy = 4a^2x^2(3x - a) + 2xy(3x - a) = 2x(3x - a)(2a^2x + y)$

5.  $x^2(y - a) + 4a - 4y = x^2(y - a) - 4(y - a) = (y - a)(x + 2)(x - 2)$

6.  $x^2 + 4x + 4 - 25a^2 = (x + 2)^2 - 25a^2 = (x + 2 + 5a)(x + 2 - 5a)$

7.  $4x^2a + 1 - x^2 - 4a = x^2(4a - 1) - (4a - 1) = (4a - 1)(x + 1)(x - 1)$

8.  $x^2(x - a) + 5x(x - a) + 6x - 6a = (x - a)(x^2 + 5x + 6) = (x - a)(x + 1)(x + 5)$

9.  $(x^2 - a^2)^2 - (x + a)^2 = (x - a)^2(x + a)^2 - (x + a)^2 = (x + a)^2(x - a - 1)(x - a + 1)$

10.  $a^2 - 3ax + 6x - 4 = (a - 2)(a + 2) - 3x(a - 2) = (a - 2)(a + 2 - 3x)$

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Να παραγοντοποιήσετε τις παρακάτω παραστάσεις:

$$1. 10x^2 - 5x = 5x(2x - 1)$$

$$2. 16a^2 + 9 + 24a = (4a + 3)^2$$

$$3. a^4 - 16 = (a - 2)(a + 2)(a^2 + 4)$$

$$4. 15a^3x^2 - 6a^2x^2 + 10axy - 4xy = 3a^2x^2(5a - 2) + 2xy(5a - 2) = x(5a - 2)(3a^2x - 2y)$$

$$5. y^2(x - a) + 4a - 4x = y^2(x - a) - 4(x - a) = (x - a)(y - 2)(y + 2)$$

$$6. x^2 + 6x + 9 - 4a^2 = (x + 3)^2 - 4a^2 = (x + 3 + 2a)(x + 3 - 2a)$$

$$7. 5x^2a + 1 - x^2 - 5a = 5a(x^2 - 1) - (x^2 - 1) = (x + 1)(x - 1)(5a - 1)$$

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

$$9. (4a^2 - 1)^2 - (2a + 1)^2 = (2a - 1)^2(2a + 1)^2 - (2a + 1)^2 = (2a + 1)^2(2a - 1 - 1)(2a - 1 + 1) = 4a(2a + 1)^2(a - 1)$$

$$10. y^2 - 2yx + 6x - 9 = (y - 3)(y + 3) - 2x(y - 3) = (y - 3)(y + 3 - 2x)$$

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Να παραγοντοποιήσετε τις παρακάτω παραστάσεις:

$$1. 12x^2 - 8x = 4x(3x - 2)$$

$$2. a^4 + 16 + 8a^2 = (a^2 + 4)^2$$

$$3. 16y^4 - 1 = (4y^2 + 1)(2y - 1)(2y + 1)$$

$$4. 12a^3x^4 - 4a^4x^3 + 6x^2y - 2axy = 4a^3x^3(3x - a) + 2xy(3x - a) = 2x(3x - a)(2a^3x + y)$$

$$5. 4x^2(y - a) + 4a - 4y = 4x^2(y - a) - 4(y - a) = 4(y - a)(x - 1)(x + 1)$$

$$6. x^2 + 2x + 1 - a^2 = (x + 1)^2 - a^2 = (x + 1 + a)(x + 1 - a)$$

$$7. 9x^2a + 1 - x^2 - 9a = 9a(x^2 - 1) - (x^2 - 1) = (x - 1)(x + 1)(9a - 1)$$

$$8. x^2(x - a) + 10x(x - a) + 9x - 9a = (x - a)(x^2 + 10x + 9) = (x - a)(x + 1)(x + 9)$$

$$9. (a^2 - x^2)^2 - (a - x)^2 = (a - x)^2(a + x)^2 - (a - x)^2 = (a - x)^2(a + x + 1)(a + x - 1)$$

$$10. a^4 - 3a^2x + 6x - 4 = (a^2 - 2)(a^2 + 2) - 3x(a^2 + 2) = (a^2 + 2)(a^2 - 2 - 3x)$$

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Να παραγοντοποιήσετε τις παρακάτω παραστάσεις:

- $9x^2 + 18x = 9x(x + 2)$
- $a^4 + 9 + 6a^2 = (a^2 + 3)^2$
- $16y^4 - a^4 = (4y^2 + a^2)(2y - a)(2y + a)$
- $9a^3x^4 - 3a^4x^3 + 9x^2y - 3axy = 3a^3x^3(3x - a) + 3xy(3x - a) = 3x(3x - a)(a^3x^2 + y)$
- $7x^2(y - a) + 7a - 7y = 7x^2(y - a) - 7(y - a) = 7(y - a)(x + 1)(x - 1)$
- $x^2 - 4x + 4 - 9a^2 = (x + 2)^2 - 9a^2 = (x + 2 + 3a)(x + 2 - 3a)$
- $4x^2a + 1 - x^2 - 4a = x^2(4a - 1) - (4a - 1) = (4a - 1)(x + 1)(x - 1)$
- $x^2(x - a) + 7x(x - a) + 6x - 6a = (x - a)(x^2 + 7x + 6) = (x - a)(x + 1)(x + 6)$
- $(9a^2 - 1)^2 - (3a + 1)^2 = (3a - 1)^2(3a + 1)^2 - (3a + 1)^2 = (3a + 1)^2(3a - 1 - 1)(3a - 1 + 1) = 3a(3a + 1)^2(3a - 2)$
- $y^2 - 3yx + 9x - 9 = (y + 3)(y - 3) - 3x(y - 3) = (y - 3)(y + 3 - 3x)$