

MTH-4106 Factoring and Algebraic Fractions: Worksheet #4

Factor the following polynomials by using the appropriate method.

4 or 6 terms: Try grouping. If that doesn't work then try removing the common factor.
3 terms: If it is of the format $ax^2 + bx + c$ then use product-sum method. If not, then remove common factor.

Any other number of terms: Remove common factor.

1. $4x^3y^2 - 2xy^3 + 8x^2y$

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

2. $(15m + 10n) + (9t^2m + 6nt^2)$

$$5(3m + 2n) + 3t^2(3m + 2n)$$

$$(5 + 3t^2)(3m + 2n)$$

3. $x^2 - 2x - 15$

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

4. $28a^4c^2y - 14axy + 7a^3y^2c$

$$7ay(4a^3c^2 - 2x + a^2yc)$$

5. $(s^5 - s^4) + (s - 1)$

$$s^4(s - 1) + 1(s - 1)$$

$$(s^4 + 1)(s - 1)$$

6. $x^2 + 3x - 18$

$$(x + 6)(x - 3)$$

7. $6s^4t^2 + 12s^2t - 18ust^3$

$$6st(s^3t + 2s - 3ut^2)$$

$$8. (2b-8a)+(ba-4a^2)$$

$$2(b-4a) + a(b-4a)$$

$$(2+a)(b-4a)$$

$$9. a^2 - 6a + 9$$

$$(a-3)(a-3)$$

$$10. 6a^2b^3x^2 - 24a^3b^2xy + 18ab^2x^3 - 30b^3x^4y^2 + 3a^4b^4cx^2y^2$$

$$3b^2x(2a^2bx - 8a^3y + 6ax^2 - 10b^3y^2 + a^4bcxy^2)$$

changed
→ rid of
2

$$11. (2a^3 + 2a^2) + (6a + 6)$$

$$2a^2(a+1) + 6(a+1)$$

$$(2a^2 + 6)(a+1) = (2(a^2 + 3))(a+1)$$

$$12. b^2 + 14b + 33$$

$$(b+3)(b+11)$$

$$13. 24e^2f^3g - 16e^2f^2g^2 + 8efg - 32e^3f^3g^3$$

$$8efg(3ef^2 - 2efg + 1 - 4e^2fg^2)$$

$$14. 12a^3x + b^4y - y - 4x + 4b^4x + 3a^3y$$

$$(12a^3x + 3a^3y) + (4b^4x + b^4y) + (-4x - y)$$

$$3a^3(4x + y) + b^4(4x + y) - 1(4x + y) = (3a^3 + b^4 - 1)(4x + y)$$

$$15. x^2 - 7x + 6$$

$$(x-6)(x-1)$$