PROBLEMS AND SOLUTIONS - FACTORING POLYNOMIAL EXPRESSIONS

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Problem 1:

Given the polynomial expression $3x^7 - 18x^3 + 9x^2$, factor out the **Greatest Common Factor.**

Problem 2:

Given the polynomial expression $15x^2 - 5x$, factor out the **Greatest Common Factor.**

Problem 3:

Given the polynomial expression $8x^2 + 4$, factor out the **Greatest Common Factor.**

Problem 4:

Given the polynomial expression $6x^3 - 8x^2$, factor out the **Greatest Common Factor.**

Problem 5:

Given the polynomial expression $kx^2 - ktx + 3x - 3t$, where k and t are constants, factor out the **Greatest Common Factor** in the two middle terms.

Problem 6:

Given the polynomial expression $2x(x - 3) - (x - 3)$, factor out the **Greatest Common Factor**.

Problem 7:

Given the polynomial expression $25q^2(m + 1)^2 - 15q(m + 1)^2 + 5(m + 1)^2$, factor out the **Greatest Common Factor**.

Problem 8:

Given the polynomial expression $15x^2(r + 3)^3 - 33x^2(r + 3)^2$, factor out the **Greatest Common Factor**.

Problem 9:

Try to factor the polynomial expression $x^3 - 4x^2 + 2x - 8$ relative to the integers using the **Grouping Method**.

Problem 10:

Try to factor the polynomial expression $3x^3 + 2x^2 - 6x + 2$ relative to the integers using the **Grouping Method**.

Problem 11:

Try to factor the trinomial $x^2 - 5x + 6$ relative to the integers.

Problem 12:

Try to factor the trinomial $x^2 + 5x + 6$ relative to the integers.

Problem 13:

Try to factor the trinomial $x^2 - 5x - 6$ relative to the integers.

Problem 14:

Try to factor the trinomial $x^2 + 5x - 6$ relative to the integers.

Problem 15:

Try to factor the trinomial $x^2 - 10x + 25$ relative to the integers.

Problem 16:

Try to factor the trinomial $x^2 + 6x + 9$ relative to the integers.

Problem 17:

Try to factor the trinomial $x^2 + 2x + 4$ relative to the integers.

Problem 18:

Try to factor the trinomial $2x^2 + 7x + 6$ relative to the integers.

Problem 19:

Try to factor the trinomial $6x^2 + x - 2$ relative to the integers.

Problem 20:

Factor the following "special" polynomials relative to the integers.

(a) $x^2 - 9$

(b) $k^2 - m^2$

(c) $x^3 - 8$

(d) $x^3 + 125$

Problem 21:

Factor $x^4 - 8x^2 - 9$ relative to the integers.

SOLUTIONS

You can find detailed solutions below the link for this problem set!

1. $3x^2(x^5 - 6x + 3)$	2. $5x(3x - 1)$	3. $4(2x^2 + 1)$
4. $2x^2(3x - 4)$	5. $kx^2 - (kt - 3)x - 3t$ or $kx^2 + (-kt + 3)x - 3t$ or $kx^2 + (3 - kt)x - 3t$	6. $(x - 3)(2x - 1)$
7. $5(m + 1)^2(5q^2 - 3q + 1)$	8. $3x^2(r + 3)^2(5r + 4)$	9. $(x - 4)(x^2 + 2)$
10. Not factorable relative to the integers.	11. $(x - 2)(x - 3)$	12. $(x + 2)(x + 3)$
13. $(x - 6)(x + 1)$	14. $(x + 6)(x - 1)$	15. $(x - 5)(x - 5) = (x - 5)^2$
16. $(x + 3)(x + 3) = (x + 3)^2$	17. Not factorable relative to the integers.	18. $(2x + 3)(x + 2)$
19. $(2x - 1)(3x + 2)$	20. a. $(x - 3)(x + 3)$ b. $(k - m)(k + m)$ c. $(x - 2)(x^2 + 2x + 4)$ d. $(x + 5)(x^2 - 5x + 25)$	21. $(x - 3)(x + 3)(x^2 + 1)$