

Factoring and Conjugates

Factor each expression completely. Show all work and simplify when possible.

Factor each difference of squares.

1. $x^2 - 16$

4. $2x^2 - 32$ (factor out constant first)

2. $4x^2 - 25$

5. $3x^2 - 75$ (factor out constant first)

3. $9x^2 - 49$

Factor each perfect square.

6. $x^2 + 10x + 25$

9. $2x^2 + 12x + 18$ (factor out constant first)

7. $x^2 - 12x + 36$

10. $3x^2 - 18x + 27$ (factor out constant first)

8. $4x^2 + 12x + 9$

Factor each quadratic expression.

11. $x^2 + 7x + 12$

13. $x^2 + 3x - 10$

12. $x^2 - 5x + 6$

14. $2x^2 + 16x + 24$ (factor out constant first)

15. $3x^2 - 21x + 36$ (factor out constant first)

Factor out the highest power of x from each expression.

16. $x^3 + 2x^2 - 5x$

19. $\frac{3x^7 - 6x^2 + 2x}{4x^5 - 3x^4}$

17. $\frac{2x^4 - 6x^3 + 4x^2}{x^4 - 3x^4 + x^3}$

20. $\frac{x^7 - 5x^5 + 2x^3}{3x^2}$

18. $\frac{2x^4 - 7x^2 + 4x}{4x^5 - 3x^4 + x^3}$

Multiply by the conjugate (only simplify #21 and #23)

21. $\sqrt{x+5} - \sqrt{x-3}$

22. $\sqrt{x^2+4} - \sqrt{x^2-1}$

23. $\frac{\sqrt{x+h} - \sqrt{x}}{h}$

24. $\frac{x-9}{\sqrt{x}-3}$