Expressions, Brackets and Rearranging Formulae

Algebra · 6 questions · step-by-step answers at the end

Name: Date: Score: / 6

USEFUL EQUATIONS

$a(b + c) = ab + ac$ $(x + a)(x + b) = x^2 + (a + b)x + ab$ $a^2 - b^2 = (a - b)(a + b)$

$(a + b)^2 = a^2 + 2ab + b^2$

Questions

Show your working in the space under each question.

1. EASY Simplify $5a + 3b - 2a + b$.

2. EASY Factorise $6x^2 - 9x$.

3. MEDIUM Expand $(x - 4)^2$.

4. MEDIUM Factorise $x^2 - 49$.

5. HARD Make r the subject of $V = (4/3)\pi r^3$.

6. HARD Simplify $(x^2 - 9)/(x^2 + 5x + 6)$.

Step-by-step answers

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1. Collect like terms: **$3a + 4b$**.
2. The common factor is 3x: **$3x(2x - 3)$**.
3. $(x - 4)(x - 4) = x^2 - 4x - 4x + 16 =$ **$x^2 - 8x + 16$**.
4. Difference of two squares: **$(x - 7)(x + 7)$**.
5. Multiply by 3: $3V = 4\pi r^3$. Divide by 4π: $r^3 = 3V/(4\pi)$. Cube root: **$r = \sqrt[3]{(3V/(4\pi))}$**.
6. Factorise: $(x - 3)(x + 3)/[(x + 2)(x + 3)]$. Cancel $(x + 3)$: **$(x - 3)/(x + 2)$**.