Answer on Question #59237 – Math – Algebra

Simplify each of the following expressions as far as possible; multiply out any brackets, expand any algebraic fractions, and collect like terms together. Show your working.

Question

8t − 10 − 10t + 15

Solution

$$8t\ -\ 10\ -\ 10t\ +\ 15 = (8t - 10t) + (-10 + 15) = -2t + 5$$

Answer: $-2t + 5$.

Question

3(7 − 5p)

Solution

$$3(7\ -\ 5p) = 3 \cdot 7 - 3 \cdot 5p = 21 - 15p$$

Answer: $21 - 15p$.

Question

1 + x(6 − 4x) − 6x

Solution

$$1\ +\ x(6\ -\ 4x) -\ 6x = 1\ + x\ \cdot 6 - x \cdot 4x -\ 6x = 1 + (6x - 6x) - 4x^2 = 1 - 4x^2$$

Answer: $1 - 4x^2$.

Question

12a − 4(5b − 2a)

Solution

$$12a\ -\ 4(5b\ -\ 2a) = 12a\ -\ 4 \cdot 5b -\ 4(-\ 2a) = 12a\ -\ 20b + 8a = (12a\ + 8a) -\ 20b = \\ = 20a - 20b$$

Answer: $20a - 20b$.

Question

4x(7 − 3x − 2x^2) + 5(3x^2 − 12x)

Solution

$$4x(7\ -\ 3x\ -\ 2x^2) +\ 5(3x^2\ -\ 12x) \\ = 4x \cdot 7 +\ 4x \cdot (-\ 3x\ ) +\ 4x \cdot (-\ 2x^2) +\ 5 \cdot (3x^2\ ) +\ 5 \cdot (-\ 12x) = \\ =\ 28x - 12x^2 - 8x^3 + 15x^2 - 60x = (28x - 60x) + (15x^2 - 12x^2) - 8x^3 \\ = -32x + 3x^2 - 8x^3$$

Answer: $-32x + 3x^2 - 8x^3$

Question

q^2 – 4q + 6

_____

q

Solution

$$\frac{q^2 - 4q + 6}{q} = \frac{q^2}{q} - \frac{4q}{q} + \frac{6}{q} = q - 4 + \frac{6}{q}.$$

Answer: $q - 4 + \frac{6}{q}$.