

So we are given an expression:

$$(x + 7) \cdot (3 + x) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

Let's differentiate it!

$$(x + 7) \cdot (3 + x) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

Uhhh, let's simplify it a bit...

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Let's reshuffle operands a bit

$$(7 + x) \cdot (3 + x) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

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$$(3 + x) \cdot (7 + x) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

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$$(3 + x) \cdot (7 + x) + 2 \cdot (3 + x) + (x + 7) \cdot (9 + x)$$

Let's reshuffle operands a bit

$$2 \cdot (3 + x) + (3 + x) \cdot (7 + x) + (x + 7) \cdot (9 + x)$$

Here we fold in half the expression:

$$(3 + x) \cdot (2 + 7 + x) + (x + 7) \cdot (9 + x)$$

Some evaluations leave us with

$$(3 + x) \cdot (9 + x) + (x + 7) \cdot (9 + x)$$

Let's reshuffle operands a bit

$$(3 + x) \cdot (9 + x) + (7 + x) \cdot (9 + x)$$

Here we fold in half the expression:

$$(9 + x) \cdot (3 + x + 7 + x)$$

Let's reshuffle operands a bit

$$(9 + x) \cdot (3 + 7 + x + x)$$

Some evaluations leave us with

$$(9 + x) \cdot (3 + 7 + 2 \cdot x)$$

Some evaluations leave us with

$$(9 + x) \cdot (10 + 2 \cdot x)$$

So finally:

$$(9 + x) \cdot (10 + 2 \cdot x)$$