

FOIL method exercises (ver.241029)

[Pattern 1] x without coefficient x に係数が無いパターン

Ex.) Expand and simplify $(x + 2)(x - 5)$

Step 1: Circle the terms 項を丸で囲む

$$(\textcircled{x} \textcircled{+ 2}) (\textcircled{x} \textcircled{- 5})$$

Step 2: Expand with FOIL method FOIL 法で展開する

First

$$(\textcircled{x} \textcircled{}) (\textcircled{x} \textcircled{}) = x^2$$

F	O	I	L
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Outer

$$(\textcircled{x} \textcircled{}) (\textcircled{} \textcircled{- 5}) = x^2 - 5x$$

F	O	I	L
---	---	---	---

Inner

$$(\textcircled{} \textcircled{+ 2}) (\textcircled{x} \textcircled{}) = x^2 - 5x + 2x$$

F	O	I	L
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Last

$$(\textcircled{} \textcircled{+ 2}) (\textcircled{} \textcircled{- 5}) = x^2 - 5x + 2x - 10$$

F	O	I	L
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Step 3: Combine the O and I terms O と I の項を合わせる

$$\begin{aligned} & x^2 - 5x + 2x - 10 \\ = & x^2 - 3x - 10 \end{aligned}$$

Answer $x^2 - 3x - 10$

Expand and simplify 展開し、項をまとめなさい

$$\begin{aligned}
 (1) \quad (x + 2)(x + 5) &= \underline{\text{F}} \quad \underline{\text{O}} \quad \underline{\text{I}} \quad \underline{\text{L}} \\
 &= \underline{\text{F}} \quad \underline{\text{O} + \text{I}} \quad \underline{\text{L}}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad (x + 2)(x - 5) &= \underline{\text{F}} \quad \underline{\text{O}} \quad \underline{\text{I}} \quad \underline{\text{L}} \\
 &= \underline{\text{F}} \quad \underline{\text{O} + \text{I}} \quad \underline{\text{L}}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad (x - 2)(x + 5) &= \underline{\text{F}} \quad \underline{\text{O}} \quad \underline{\text{I}} \quad \underline{\text{L}} \\
 &= \underline{\text{F}} \quad \underline{\text{O} + \text{I}} \quad \underline{\text{L}}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad (x - 2)(x - 5) &= \underline{\text{F}} \quad \underline{\text{O}} \quad \underline{\text{I}} \quad \underline{\text{L}} \\
 &= \underline{\text{F}} \quad \underline{\text{O} + \text{I}} \quad \underline{\text{L}}
 \end{aligned}$$

FOIL method exercises (ver.241029)

[Pattern 2] x with coefficient x に係数があるパターン

Ex.) Expand and simplify $(3x + 2)(4x - 5)$

Step 1: Circle the terms 項を丸で囲む

$$((3x)(+2))((4x)(-5))$$

Step 2: Expand with FOIL method FOIL 法で展開する

First

$$((3x)(+2))((4x)(-5)) = \frac{12x^2}{\text{F}} \quad \frac{}{\text{O}} \quad \frac{}{\text{I}} \quad \frac{}{\text{L}}$$

Outer

$$((3x)(+2))(()(-5)) = \frac{12x^2}{\text{F}} - \frac{15x}{\text{O}} \quad \frac{}{\text{I}} \quad \frac{}{\text{L}}$$

Inner

$$(()(+2))((4x)()) = \frac{12x^2}{\text{F}} - \frac{15x}{\text{O}} + \frac{8x}{\text{I}} \quad \frac{}{\text{L}}$$

Last

$$(()(+2))(()(-5)) = \frac{12x^2}{\text{F}} - \frac{15x}{\text{O}} + \frac{8x}{\text{I}} - \frac{10}{\text{L}}$$

Step 3: Combine the O and I terms O と I の項を合わせる

$$\begin{aligned} & 12x^2 - 15x + 8x - 10 \\ = & 12x^2 - 7x - 10 \end{aligned}$$

Answer $12x^2 - 7x - 10$

Expand and simplify 展開し、項をまとめなさい

$$(5) \quad (3x + 2)(x + 5) = \begin{array}{|c|c|c|c|} \hline F & O & I & L \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|} \hline F & O+I & L \\ \hline \end{array}$$

$$(6) \quad (x + 2)(4x + 5) = \begin{array}{|c|c|c|c|} \hline F & O & I & L \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|} \hline F & O+I & L \\ \hline \end{array}$$

$$(7) \quad (3x + 2)(4x + 5) = \begin{array}{|c|c|c|c|} \hline F & O & I & L \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|} \hline F & O+I & L \\ \hline \end{array}$$

$$(8) \quad (3x - 2)(4x + 5) = \begin{array}{|c|c|c|c|} \hline F & O & I & L \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|} \hline F & O+I & L \\ \hline \end{array}$$

$$(9) \quad (3x - 2)(4x - 5) = \begin{array}{|c|c|c|c|} \hline F & O & I & L \\ \hline \end{array}$$

$$= \begin{array}{|c|c|c|} \hline F & O+I & L \\ \hline \end{array}$$

[Level 1]

1) $(x + 1)^2 = (x + 1)(x + 1) =$

2) $(x + 2)(x + 3) =$

3) $(x + 1)(x + 5) =$

[Level 2]

4) $(x - 3)(x + 5) =$

5) $(x - 6)(x + 2) =$

6) $(x + 4)(x - 2) =$

7) $(x + 1)(x - 5) =$

8) $(x - 1)^2 = (x - 1)(x - 1) =$

9) $(x - 2)(x - 3) =$

[Level 3]

10) $(2x + 1)(x + 3) =$

11) $(x + 4)(3x + 5) =$

12) $(2x + 4)(3x + 6) =$

[Level 4]

13) $(2x - 3)(x + 2) =$

14) $(3x - 5)(x + 1) =$

15) $(x + 4)(5x - 2) =$

16) $(x + 2)(3x - 8) =$

17) $(2x - 1)(x - 3) =$

18) $(x - 5)(3x - 2) =$

19) $(3x + 2)(4x - 1) =$

20) $(5x + 1)(2x - 2) =$

21) $(4x - 2)(5x + 3) =$

22) $(2x - 6)(3x + 5) =$

23) $(2x - 3)(4x - 5) =$