

Substitution

Standard

MS-A1 Formulae and Equations

updated: 2021-01-19

Learning Outcome

Topic:

Substitution

Syllabus:

- review substitution of numerical values into linear and non-linear algebraic expressions and equations

Activities/Tasks:

- Cambridge Ex 3A Q1-17

Why algebra?

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Algebra is used by Mathematicians to communicate mathematical ideas in a convenient way. **Variables** (letters and symbols) are used to represent unknown quantities whose value can change depending on the situation.

Expressions

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$$\begin{aligned} & a^2 + 1 \\ &= (-5)^2 + 1 \\ &= 25 + 1 \\ &= 26 \end{aligned}$$

Important Note

To avoid making mistakes it is good practice to **always** substitute into brackets.

Example 1

Evaluate the following, given $x = 4$

a) $2x - 3$

b) $\sqrt{6x + 12}$

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$$= 2(4) - 3$$

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$$= 5$$

b)

$$\sqrt{6x + 12}$$

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$$\begin{aligned}\text{b)} \quad & \sqrt{6x + 12} \\ &= \sqrt{6(4) + 12}\end{aligned}$$

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$$\begin{aligned}\text{a)} \quad & 2x - 3 \\ &= 2(\textcolor{red}{4}) - 3 \\ &= 8 - 3 \\ &= 5\end{aligned}$$

$$\begin{aligned}\text{b)} \quad & \sqrt{6x + 12} \\ &= \sqrt{6(\textcolor{red}{4}) + 12} \\ &= \sqrt{24 + 12} \\ &= \sqrt{36} \\ &= 6\end{aligned}$$

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Solution

$$\begin{aligned} & a^2 - 5b + c \\ &= (3)^2 - 5(-3) + (7) \\ &= 9 + 15 + 7 \\ &= 31 \end{aligned}$$

Today's work

- Cambridge Ex 3A Q1-17