Substitution

Standard

MS-A1 Formulae and Equations updated: 2021-01-19

Learning Outcome

Topic:

Substitution

Substitution

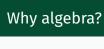
Syllabus:

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

Activities/Tasks:

· Cambridge Ex 3A Q1-17





Algebra is used 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.

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$$a^{2} + 1$$

$$= (-5)^{2} + 1$$

$$= 25 + 1$$

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For example the expression a^2+1 starts with an input a, squares it and adds 1.

$$a^{2} + 1$$

$$= (-5)^{2} + 1$$

$$= 25 + 1$$

$$= 26$$

Substituting

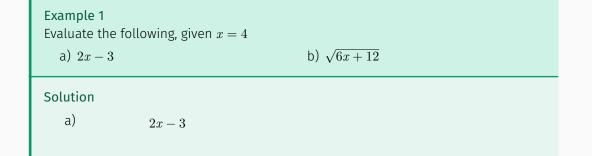
Important Note

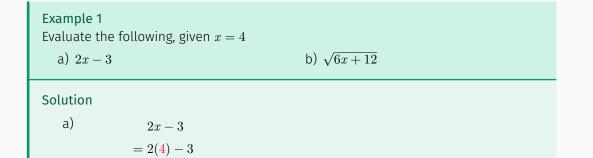
To avoid making mistakes it is good practice to **always** substitue into brackets.

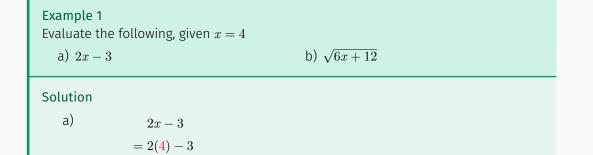
Example 1

Evaluate the following, given x=4a) 2x - 3

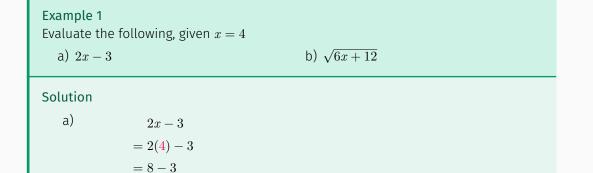
b) $\sqrt{6x+12}$

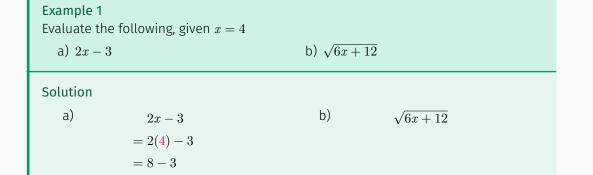






= 8 - 3





Example 1 Evaluate the following, given
$$x=4$$
 a) $2x-3$ b) $\sqrt{6x+12}$ Solution a) $2x-3$ b) $\sqrt{6x+12}$ $= 2(4)-3$ $= \sqrt{6(4)+12}$

= 8 - 3= 5

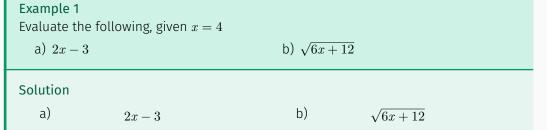
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$$x=4$$
 a) $2x-3$ b) $\sqrt{6x+12}$ Solution a) $2x-3$ b) $\sqrt{6x+12}$

 $=\sqrt{6(4)+12}$

 $=\sqrt{24+12}$

=2(4)-3

= 8 - 3



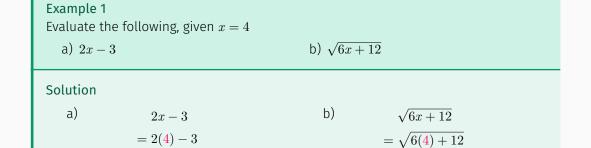
 $=\sqrt{6(4)+12}$

 $= \sqrt{24 + 12}$ $= \sqrt{36}$

$$= 2(4) - 3$$

$$= 8 - 3$$

$$= 5$$

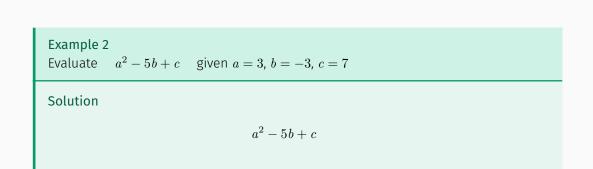


 $=\sqrt{24+12}$

 $= \sqrt{36}$ = 6

= 8 - 3

Example 2 Evaluate a^2-5b+c given a=3, b=-3, c=7



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$$a^2-5b+c$$
 given $a=3$, $b=-3$, $c=7$ Solution
$$a^2-5b+c = (\mathbf{3})^2-5(-\mathbf{3})+(7)$$

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$$a^2-5b+c$$
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$$a^2-5b+c$$
 $=(3)^2-5(-3)+(7)$

=9+15+7

Today's work

• Cambridge Ex 3A Q1-17