

Mathematics

Solving pure quadratic equations

Mr Coward



Try this

Using substitution find a value for the expressions below,

when a) $x = 3$ and b) $x = -3$

$$x^2 + 11$$

$$11x^2$$

$$4x^2 + 5$$

$$5(x^2 + 1) - 3$$

What do you notice?



Independent task

1) Solve the quadratic equations below.

a) $a^2 = 11$ b) $b^2 = 16$ c) $172 = c^2 + 3$ d) $150 = 15d^2$
e) $4e^2 + 3 = 27$ f) $11 - 4f^2 = 10$ g) $3 + 4g^2 = 27 - 2g^2$ h) $71 + h^2 = 71$

What is unusual about h?

2) Solve the quadratic equations below.

a) $(a + 1)^2 = 11$ b) $2(b - 3)^2 = 18$ c) $169 = (2x + 19)^2$

3) Optional challenge question: find the four solutions to

Note this is a quartic

equation, not a quadratic. $(2x^2 - 11)^2 + 11 = 36$



Explore

Placing any number in the gap, can you find 3 ways to make the following equation have:

$$3x^2 + 7 = [\quad]$$

- a) Integer solutions
- b) Have Irrational solutions

