

## Answer to Question #87277 – Math – Algebra

### Question

If the quadratic equation  $(1 + a^2)x^2 + 2abx + b - c = 0$  has only one root, then find the value of  $c^2(1 + a^2)$ .

### Solution

The quadratic equation is  $(1 + a^2)x^2 + 2abx + b - c = 0$ .

To get only one root for the above equation we must have the value of the discriminant equals to zero. That is,

$$(2ab)^2 - 4(1 + a^2)(b - c) = 0$$

$$4a^2b^2 - 4(b - c + a^2b - a^2c) = 0$$

$$a^2b^2 - b + c - a^2b + a^2c = 0$$

$$a^2c + c = a^2b - a^2b^2 + b$$

$$c(a^2 + 1) = b(a^2 - a^2b + 1)$$

$$c(1 + a^2) = b(1 - a^2b + a^2)$$

Thus, the value of  $c(1 + a^2)$  is  $b(1 - a^2b + a^2)$ .

**Answer:**  $b(1 - a^2b + a^2)$ .