Quadratic equations and prime numbers

Project An Interesting Method for Solving Quadratic Equation from India A quadratic equation can be solved using many different methods availablesuch as quadratic formula, graphical method, factorization, and completing the square. This paper will use and discuss an interesting method for solving quadratic equations came from India (Bluman, 2005).

For example, taking quadratic equation . The steps of this method are

(a) Move the constant term to the right of the equation.

(b) Multiply each term in the equation by four times the coefficient of the term.

(c) Square the coefficient of the original x term and add it to both sides of the equation.

(d) Take the square root of both sides.

(e) Set the left side of the equation equal to the positive square root of the number on the right side and solve for x.

(f) Set the left side of the equation equal to the negative square root of the number on the right side and solve for x.

The values x = 2, and x = -5 satisfies the quadratic equation. Therefore, the solutions are correct.

Using this approach, the solutions for some other quadratic equations are given below.

A) ; Solution: ,

B) ; Solution: No real solution, as the right side of the equation is negative number in step (c) of this method (See Appendix 1).

C); Solution: ,

D) ; Solution: ,

In conclusion, whenever it is possible to take square root of the right side of the equation in step (d) of this method, there exist real solutions of the equation. And, whenever it is not possible to take square root of the right side of the equation in step (d) of this method, there exist no real solutions of the equation.

Reference

Bluman, A. G. (2005). Mathematics in Our World. McGraw-Hill: New York.

Appendix 1

A)

B)

, no real solution as it is not possible to take square root of -32.

C)

D)

Project #2: Quadratic Formula for Yielding Prime Numbers

Prime number is defined as the number divisible by 1 or itself. A prime number has only two factorization 1 and the number itself. Mathematicians have been searching for a formula that yields prime numbers and found one such formula as (Bluman, 2005). This paper will use this formula for yielding prime numbers and verify extent to which it can generate prime numbers.

Let

Lets plug in x = 0, 1, 2, 3, 5, 7, 10, 12 and 20 and see if we get prime numbers.

(Prime number)

(Prime number)

(Prime number)

(Prime number)

(Prime number)

(Prime number)

(Prime number)

(Prime number)

(Prime number)

Therefore, it can be seen that the yields prime number for smaller values of x. The formula will not yield prime number when the term will be zero as will be divisible by x. Therefore, putting the term equals to zero.

Now, lets plug in x = 41 and 42 and see if we get prime numbers.

(Composite number)

(Composite number)

In conclusion, the formula yields prime number for x value less than 41 (see appendix 1). However, for x value equal to or greater than 41 it does not yields prime number.

Reference

Bluman, A. G. (2005). Mathematics in Our World. McGraw-Hill: New York.

Appendix 1

Table 1: Primer number using formula

x

Prime Number

x

Prime Number

0

41

Yes

22

503

Yes

1

41

Yes

23

547

Yes

2

43

Yes

24

593

Yes

3

47

Yes

25

641

Yes

4

53

Yes

26

691

Yes

5

61

Yes

27

743

Yes

6

71

Yes

28

797

Yes

7

83

Yes

29

853

Yes

8

97

Yes

30

911

Yes

9

113

Yes

31

971

Yes

10

131

Yes

32

1033

Yes

11

151

Yes

33

1097

Yes

12

173

Yes

34

1163

Yes

13

197

Yes

35

1231

Yes

14

223

Yes

36

1301

Yes

15

251

Yes

37

1373

Yes

16

281

Yes

38

1447

Yes

17

313

Yes

39

1523

Yes

18

347

Yes

40

1601

Yes

19

383

Yes

41

1681

No, Composite Number

20

421

Yes

42

1763

No, Composite Number

21

461

Yes