

Find the Function

Submission deadline: May 28th 2024

Let f be a real valued function defined on all real numbers. If

$$f(xy + 1) = f(x)f(y) - f(y) - x + 2$$

for all x, y and $f(0) = 1$, find $f(x)$.

The problem was solved by

- Ievgen Murzak, *Kyiv, Ukraine.*
- Aws Ben Hamed.
- Arda Karahan, *Trabzon Science High School, Turkey.*
- Ekansh Nitalie Garg, *year 8, Dubai College, UAE.*
- Hari Kishan, *Department of Mathematics D.N. College, Meerut, India.*
- Merdangeldi Bayramov, *Turkministan.*
- Ionut-Zaharia, *alumnus, Lower Danube University, Galati, Romania.*
- K.Sengupta, *Calcutta, India.*

Discussion:

Let $x = 0, y = 0$. Then, we get that $f(1) = 2$. Now let $y = 0$. Then, $f(1) = f(x) - 1 - x + 2$. Thus, $f(x) = x + 1$.