Let's consider

$$x^2 + 2px - q = 0$$

We know the roots to be

$$x = -p \pm \sqrt{p^2 + q}$$

So let's take a look at

$$x = -p + \sqrt{p^2 + q}$$

Let's take p very large and q to be small:

In [8]:

```
from math import sqrt
p = 1e6
q = 0.1

x = -p + sqrt(p**2 + q)
print(repr(x))
print(repr(x**2 + 2*p*x - q))
```

```
4.9942173063755035e-08
-0.00011565387248743675
```

Is this accurate? Not quite. Let's try rearranging:

$$\frac{q}{p + \sqrt{p^2 + q}}$$

In [9]:

```
x = q / (p + sqrt(p**2 + q))
print(repr(x))
print(repr(x**2 + 2*p*x - q))
```

```
4.999999999999876e-08
1.3877787807814457e-17
```

In [ ]:

```

```