

Algorithme d'Euclide étendu

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# Pour trouver les coefficients de Bézout associés aux entiers (a,b),
# On applique l'algorithme d'Euclide étendu
def xgcd(a,b):
    u = 1; v = 0
    x = 0; y = 1
    print a, '=', u, '*', a, '+', v, '*', b
    na = a
    nb = b
    while nb:
        q = na//nb
        x, u = u - q*x, x
        y, v = v - q*y, y
        na, nb = nb, na % nb
        print na, '=', u, '*', a, '+', v, '*', b

    return na, u, v

```

```
xgcd(50,17)
```

```

50 = 1 * 50 + 0 * 17
17 = 0 * 50 + 1 * 17
16 = 1 * 50 + -2 * 17
1 = -1 * 50 + 3 * 17
(1, -1, 3)

```

```
xgcd(280,11)
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280 = 1 * 280 + 0 * 11
11 = 0 * 280 + 1 * 11
5 = 1 * 280 + -25 * 11
1 = -2 * 280 + 51 * 11
(1, -2, 51)

```

```
xgcd(50,35)
```

```

50 = 1 * 50 + 0 * 35
35 = 0 * 50 + 1 * 35
15 = 1 * 50 + -1 * 35
5 = -2 * 50 + 3 * 35
(5, -2, 3)

```