Identidad de Bezout

Encuentre x, y asociados a la identidad de Bezout para:

$a = 93 \quad b = 42$

$93 = 42 \cdot 2 + 9$
$42 = 9 \cdot 4 + 6$
$9 = 6 \cdot 1 + 3 \rightarrow mcd$
$6 = 3 \cdot 2 + 0$

- $93(1) + 42(-2) = 9$
- $42(1) + 9(-4) = 6$
- $9(1) + 6(-1) = 3$

$3 = 9(1) + 6(-1)$
$3 = 9(1) + (-1)(42(1) + 9(-4))$
$3 = 9(1) + 42(-1) + 9(4)$
$3 = 9(5) + 42(-1)$
$3 = (5)(93(1) + 42(-2)) + 42(-1)$
$3 = 93(5) + 42(-10) + 42(-1)$
$3 = 93(5) + 42(-11)$
$\downarrow \quad \downarrow$
$x \quad y$

$a = 70 \quad b = 29$

$70 = 29 \cdot 2 + 12$
$29 = 12 \cdot 2 + 5$
$12 = 5 \cdot 2 + 2$
$5 = 2 \cdot 2 + 1 \rightarrow mcd$
$2 = 1 \cdot 2 + 0$

- $70(1) + 29(-2) = 12$
- $29(1) + 12(-2) = 5$
- $12(1) + 5(-2) = 2$
- $5(1) + 2(-2) = 1$

$1 = 5(1) + 2(-2)$
$1 = 5(1) + (-2)(12(1) + 5(-2))$
$1 = 5(1) + 12(-2) + 5(4)$
$1 = 5(5) + 12(-2)$
$1 = (5)(29(1) + 12(-2)) + 12(-2)$
$1 = 29(5) + 12(-10) + 12(-2)$
$1 = 29(5) + 12(-12)$
$1 = 29(5) + (-12)(70(1) + 29(-2))$
$1 = 29(5) + 70(-12) + 29(24)$
$1 = 29(29) + 70(-12)$
$\downarrow \quad \downarrow$
$x \quad y$

$a = -112 \quad b = -91$

$112 = 91 \cdot 1 + 21$
$91 = 21 \cdot 4 + 7 \rightarrow mcd$
$21 = 7 \cdot 3 + 0$

- $112(1) + 91(-1) = 21$
- $91(1) + 21(-4) = 7$

$7 = 91(1) + 21(-4)$
$7 = 91(1) + (-4)(112(1) + 91(-1))$
$7 = 91(1) + 112(-4) + 91(4)$
$7 = 91(5) + 112(-4)$

entonces $7 = -91(-5) - 112(4)$
$x \qquad y$

$a = -105 \quad b = 39$

$105 = 39 \cdot 2 + 27$
$39 = 27 \cdot 1 + 12$
$27 = 12 \cdot 2 + 3 \rightarrow mcd$
$12 = 3 \cdot 4 + 0$

- $105(1) + 39(-2) = 27$
- $39(1) + 27(-1) = 12$
- $27(1) + 12(-2) = 3$

$3 = 27(1) + 12(-2)$
$3 = 27(1) + (-2)(39(1) + 27(-1))$
$3 = 27(1) + 39(-2) + 27(2)$
$3 = 27(3) + 39(-2)$
$3 = (3)(105(1) + 39(-2)) + 39(-2)$
$3 = 105(3) + 39(-6) + 39(-2)$
$3 = 105(3) + 39(-8)$

entonces $3 = -105(-3) + 39(-8)$
$x \qquad y$