$a = 8$ $b = 9$ $G = (57, 24)$

$A = 8G = (5, 65)$ $B = 9G = (11, 39)$ $8(9G)$

$M = (40, 36)$ 40

$aB = 8 \times 9 = 72$

$C = M + aB$ $aB = 72G = (10, 11)$

$C = (40, 36) + (10, 11)$

$x_1 = 40, \quad x_2 = 10, \quad y_1 = 36, \quad y_2 = 11$

$$\lambda = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 36}{10 - 40} = \frac{-25}{-30} = \frac{25}{30} = \frac{5}{6} = 5 \times 6^{-1}$$

$$\lambda = 5 \times 15 = 75 \qquad \underline{\lambda = 75}$$

$$x_3 = (\lambda)^2 - x_1 - x_2 = (75)^2 - 40 - 10$$

$$= 5625 - 50 = 5575 \bmod 89$$

$$\boxed{x_3 = 57}$$

$$V = y_1 + \lambda x_1 = 36 + 75(40) = 3036 \bmod 89$$

$$\boxed{V = 70}$$

$$V = y_1 - \lambda x_1 = 36 - 75(40) = 36 - 3000$$

$$= -2964 \bmod 89$$

$$\boxed{V = 62}$$

$$y_3 = \lambda x_3 + V = 75(57) + 62$$

$$= 4337 \bmod 89$$

$$= 65$$

$$C = (57, -65) \implies \boxed{C = (57, 24)}$$

Decrypt (57, 24)

$aB = bA$

$bA = 72G = (70, 77$

$D = C - bA$

$D = (57, 24) - (70, 77)$

$D = (57, 24) + (70, -77)$

$P_1 - P_2 = P_1 + (-P_2)$

$= (x_1, y_1) + (x_2, -$

$x_1 = 57, \quad x_2 = 70, \quad y_1 = 24, \quad y_2 = -77$

$\lambda = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{-77 - 24}{70 - 57} = \dfrac{-35}{-47} = \dfrac{35}{47} =$

$\lambda = 35 \times 47^{-1} = 35 \times 36 = 1260 \bmod 89$
$= 14$

$x_3 = (\lambda)^2 - x_1 - x_2 = (14)^2 - 57 - 70$
$= 196 - 67 = 129 \bmod 89$

$\boxed{x_3 = 40}$

Decrypt 80 (80, 8)

$D = C - bA$

$D = (80, 8) - (70, 77)$

$D = (80, 8) + (70, -77)$

$\lambda = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{-77 - 8}{70 - 80} = \dfrac{-79}{-70} = \dfrac{79}{70}$

$\lambda = 79 \times 70^{-1} = 79 \times 74 = 266 \bmod 89$

$\boxed{\lambda = 88}$

$x_3 = (\lambda)^2 - x_1 - x_2 = (88)^2 - 80 - 10$
$= 7744 - 90$
$x_3 = 7654 \bmod 89$
$x_3 = 0$

$V = y_1 - \lambda x_1 = 8 - 88(80) = 8 - 7040$
$= -7032 \bmod 89$

$\boxed{V = 88}$

$$y_3 = \lambda x_3 + y = 88(0) + 88 = 88$$

$$B = (0, -88) \Rightarrow B = (0, 1)$$