

$$s = k^{-1} (m + dv) \pmod{19}$$

$$s = 2(26 + 7(7)) = 2(26 + 49) = 2(18)$$

$$\underline{36 \equiv 17 \pmod{19}}$$

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verificar

$$w = s^{-1} \pmod{19}$$

$$= 17^{-1} = 9 \pmod{19}$$

$$u_1 = m w = 26(9) = 6$$

$$u_2 = w v = 9(7) = 6$$

$$X = 6P + 6Q = (16, 13) + 6(0, 6)$$

$$2Q = 2(0, 6) = (13, 1) = 16(1, 1) + 9P$$

$$x_3 = \left(\frac{3(0^2) + 2}{2(6)} \right)^2 - 2(0) = \left(\frac{2}{12} \right)^2 = \left(\frac{1}{6} \right)^2 = 3^2 = 9$$

$$y_3 = 3(0 - 9) - 6 = 7 - 6 = 1$$

$$4Q = 2(9, 1)$$

$$x_3 = \left(\frac{3(9^2) + 2}{2} \right)^2 - 18 = \left(\frac{3(13) + 2}{2} \right)^2 - 18 = \left(\frac{7}{2} \right)^2 - 18$$

$$(17)^2 - 18 = 7$$

$$y_3 = 12(9 - 7) - 1 = 24 - 1 = 23 = 6$$

$$4Q = (7, 6)$$

$$6Q = 2Q + 4Q = (9, 1) + (0, 6)$$

$$x_3 = \left(\frac{6-1}{7-9} \right)^2 - 7 - 9 = \left(\frac{5}{-2} \right)^2 - 16 = \left(\frac{1}{3} \right)^2 + 1 = \left(\frac{1}{3} \right)^2 + 1 = 3$$

$$y_3 = 6(9-3) - 1 = 36 - 1 = 1$$

$$6Q = (3, 1)$$

$$X = (16, 13) + (3, 1)$$

$$x_3 = \left(\frac{13-1}{16-3} \right)^2 - 16 - 3 = \left(\frac{12}{13} \right)^2 - 19 = \left(\frac{14}{13} \right)^2 - 19$$

$$= 9 + 15 = 24 = 7$$

$$y_3 = 14(3-7) - 1 = 14(-4) - 1 = -56 - 1 = -57$$

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