$$s = \frac{p_y - q_y}{p_x - q_x},\ r_x = s^2 - p_x - q_x,\ r_y = s(p_x - r_x) - p_y$$

$$s = \frac{3(p_x^2 + a)}{2p_y},\ r_x = s^2 - 2p_x,\ r_y = s(p_x - r_x) - p_y$$

$$R = (R_x, R_y) = kG,\ r = R_x \ mod\ n$$

$$s = \frac{H(m) + rd}{k} \ mod\ n$$

$$u_1 = (H(m)(s^{-1} \ mod\ n)) \ mod\ n$$

$$u_2 = (r(s^{-1} \ mod\ n)) \ mod\ n$$

$$P = (P_x, P_y) = u_1 G + u_2 Q,\ p = P_x \ mod\ n$$