

①

$$\text{الف) } 4x^2 - 9x - 9 = 0 \rightarrow x^2 - 9x - 9 = 0 \rightarrow (x-9)(x+9) \quad (1)$$

$$x \rightarrow \frac{9}{4} = \frac{9}{4}$$

$$x \rightarrow \frac{-9}{4} = -\frac{9}{4}$$

$$9 \quad -9 \quad \checkmark$$

$$\text{ب) } 10x^2 - 1x - 9 = 0 \rightarrow x^2 - 1x - 9 = 0 \rightarrow \Delta = 49 - 4(1)(-9) = 100$$

$$x = \frac{1 \pm \sqrt{100}}{2} \rightarrow 9 \rightarrow \frac{9}{1} = 9$$

$$x \rightarrow -1 \rightarrow \frac{-1}{1} = -1$$

$$\text{ج) } 4x^2 - 9x - 1 = 0 \rightarrow x^2 - 9x - 1 = 0 \rightarrow (x-9)(x+1)$$

$$x \rightarrow \frac{9}{4} \rightarrow \frac{9}{4}$$

$$x \rightarrow \frac{-1}{4} \rightarrow -\frac{1}{4}$$

$$9 \quad -1 \quad \checkmark$$

$$\text{د) } 1x^2 - 9x - 1 = 0 \rightarrow x^2 - 9x - 1 = 0 \rightarrow (x-9)(x+1) = 0$$

$$9 \quad -1 \quad \checkmark$$

$$\text{الف) } x^2 - 9x - 1 = 0 \rightarrow (x-9)(x+1) = x \rightarrow 9 \quad -1 \quad \checkmark \quad (2)$$

$$\text{ب) } 1x^2 + 9x + 1 = 0 \rightarrow x^2 + 9x + 1 = 0 \rightarrow (x+9)(x+1)$$

$$\frac{-9}{1} = -9 \quad \frac{-1}{1} = -1$$

$$-9 \quad -1 \quad \checkmark$$

$$c) x^p + px + p = 0 \rightarrow \Delta = p - p(1)(p) = 1 - p^2 \quad \text{! is in } \mathbb{Z}_p \quad \checkmark$$

$$s) px^p + px - p = 0 \quad q - p(p)(-p) = p^2$$

$$\frac{-p \pm \sqrt{p^2}}{q} = x \rightarrow \begin{aligned} &\frac{-p + \sqrt{p^2}}{q} \approx 0/p^2 \Rightarrow \frac{-1 + \sqrt{p}}{p} \\ &\frac{-p - \sqrt{p^2}}{q} \approx -1/p \Rightarrow \frac{-1 - \sqrt{p}}{p} \end{aligned} \quad \checkmark$$

$$A = \{1, 2, p\} \quad , \quad B = \{p, p\} \quad A \times B - B^p = ? \quad (3)$$

$$A \times B = \{(1, p), (1, p), (2, p), (2, p), (p, p), (p, p)\} \quad \{(1, p), (1, p)\} \quad \checkmark$$

$$B^p = \{(p, p), (p, p), (p, p), (p, p)\}$$

$$\text{Q} \text{ Q} \text{ E} \text{ (p)} \rightarrow \text{(-1)} \quad (4)$$

$$① \rightarrow m^p = m + p \rightarrow m^p - m - p = 0 \rightarrow (m + p)(m + 1) \quad \checkmark$$

$$② \rightarrow m^p = m + p \rightarrow \begin{aligned} &\begin{matrix} p & \text{Q} \text{ Q} \text{ E} \text{ X} \\ -1 & \text{Q} \text{ Q} \text{ E} \text{ X} \end{matrix} \rightarrow \text{! is in } \mathbb{Z}_p \end{aligned}$$

$$a^p = pa - p \rightarrow a^p - pa + p = 0 \rightarrow (a - 1)(a - p) \quad (5)$$

$$\text{Q} \text{ Q} \text{ E} \text{ (1)} \quad \text{(p)} \quad \checkmark$$

$$1^{\text{er}} - 1 = a + b \rightarrow a + b = 0 \rightarrow x = 1 \rightarrow \begin{cases} a + b = 0 \\ x a + b = 1 \end{cases} \rightarrow \begin{cases} a + b = 0 \\ a + b = -1 \end{cases} \rightarrow \begin{cases} a = 1 \\ b = -1 \end{cases} \rightarrow \boxed{143}$$

$$\left. \begin{aligned} a + b &= 0 \\ x a + b &= 1 \end{aligned} \right\} \rightarrow \begin{cases} a = 1 \\ b = -1 \end{cases}$$

$$\rightarrow a \times b = 1(-1) = \boxed{-143}$$

$$1^{\text{er}} k - 1^{\text{er}} = \varepsilon - 1^{\text{er}} k \rightarrow a k = v \rightarrow \boxed{k = \frac{v}{a}} \quad (7)$$

$$y^k y = x^v - x + 1^{\text{er}} \rightarrow x = 1 \rightarrow y^k y = 0 \rightarrow y(y^k y) = 0 \quad (8)$$

الف)

$$x^v y = \pm \sqrt{y} \quad X$$

$$x^v y = \pm \sqrt{y}$$

$$\rightarrow |x| + |y| = 1^{\text{er}} \rightarrow x = 0 \rightarrow |y| = 1^{\text{er}} \rightarrow y = \pm 1^{\text{er}} \quad \text{Causé } b \bar{b} X$$

$$2^{\text{e}}) |y| = \sqrt{1 - \cos x} \rightarrow x = 0 \rightarrow |y| = 1 \rightarrow y = \pm 1 \quad \text{Causé } b \bar{b} X$$

$$y = \pm \sqrt{1 - \cos x}$$

$$3) y^v + x^v + 1^{\text{er}} x + 1 = 0 \rightarrow x = 0 \rightarrow y^v = -1 \quad \text{Causé } b \bar{b} \checkmark$$

$$\sqrt[p]{y} + x^p = px - p \quad \sqrt[p]{y_1} + x^p = px - p$$

(9)

$$\sqrt[p]{y} + x^p = px - p \rightarrow \sqrt[p]{y_1} = \sqrt[p]{y_p} \rightarrow y_1 = y_p \quad \text{مساواة}$$

$$y^p + px = \Delta x \rightarrow y_1^p + px - \Delta x = y_p^p + px - \Delta x$$

$$y_1^p = y_p^p \quad \text{مساواة} \quad \left\{ \begin{array}{l} y_1^p - y_p^p + p(y_1 - y_p) = 0 \rightarrow y_1 = y_p \\ (y_1 - y_p)(y_1^{p-1} + y_1^{p-2}y_p + \dots + y_p^{p-1} + p) = 0 \end{array} \right.$$

$$\text{مثال) } x=0 \rightarrow 0 \times \sin y = \sin 0 \times y \rightarrow 0=0 \quad \text{مساواة}$$

(10)

$$\rightarrow \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = p \rightarrow \frac{x}{y} + \frac{y}{x} = \varepsilon$$

$$\frac{x^p + y^p}{xy} = \varepsilon \rightarrow y^p + x^p = \varepsilon xy \quad \text{مساواة}$$

$$y^p = \varepsilon xy \rightarrow \frac{1}{y} = \sqrt{\frac{x}{y}} \rightarrow \frac{1}{y} = \sqrt{\frac{y}{x}} \rightarrow (\frac{1}{y} + \frac{1}{y} = p) \times y$$

$$\frac{1}{y} - p \frac{1}{y} + 1 = 0 \rightarrow (\frac{1}{y} - 1)^p = 0 \rightarrow \frac{1}{y} = 1 \rightarrow \sqrt{\frac{x}{y}} = 1 \rightarrow x = y \quad \text{مساواة}$$