

$$m \in \left] \frac{4}{3}, \frac{97}{12} \right[ \quad (1) \quad \text{61}$$

$$m \in ]-\infty, -1[ \cup \left] \frac{3+2\sqrt{6}}{5}, +\infty \right[ \quad (2)$$

$$m \in \left] \frac{2+6\sqrt{5}}{-11}, -\frac{4}{3} \right[ \cup \left] 1, \frac{2-6\sqrt{5}}{-11} \right[ \quad (3)$$

(4) لا يوجد قيم لـ  $m$ .

$$\begin{cases} x' + x'' = 23 \\ x' \times x'' = 28 \end{cases} \quad (2) \quad \text{62}$$

$$x^2 - 23x + 28 = 0$$

$$x' \approx 1,28, \quad x'' \approx 21,7$$

$$\begin{cases} 2(x' + x'') = 12 \\ 2x' \times x'' = 9 \end{cases} \quad (1) \quad \text{63}$$

$$2x^2 - 12x + 9 = 0 \quad (1)$$

$$x' = 3 - 3/\sqrt{2}, \quad x'' = 3 + 3/\sqrt{2}$$

$$\begin{cases} 2(x' + x'') = 12 \\ 2x' \times x'' > 9 \end{cases} \quad (2)$$

$$-2x^2 + 12x - 9 > 0$$

$$P(x) > 0, x \in ]-\infty, \frac{3}{2}[ \text{ لـما}$$

$$P(x) = 0, x = \frac{3}{2}, x = -2 \text{ لـما (1) } \mathbf{65}$$

$$P(x) < 0, x \in ]-2, \frac{3}{2}[ \text{ لـما}$$

$$P(x) > 0, x \in ]-\infty, -2[ \cup ]\frac{3}{2}, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = \frac{2}{3}, x = 2 \text{ لـما (2)}$$

$$P(x) > 0, x \in ]\frac{2}{3}, 2[ \text{ لـما}$$

$$P(x) < 0, x \in ]-\infty, \frac{2}{3}[ \cup ]2, +\infty[ \text{ لـما}$$

$$P(x) < 0, x \in ]-\infty, +\infty[ \text{ لـما (3)}$$

$$P(x) > 0, x \in ]-\infty, +\infty[ \text{ لـما (4)}$$

$$P(x) = 0, x = \frac{3\sqrt{2}}{2} \text{ لـما (5)}$$

$$P(x) > 0, x \in ]-\infty, \frac{3\sqrt{2}}{2}[ \cup ]\frac{3\sqrt{2}}{2}, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = \frac{\sqrt{15}}{5} \text{ لـما (6)}$$

$$P(x) > 0, x \in ]-\infty, \frac{\sqrt{15}}{5}[ \cup ]\frac{\sqrt{15}}{5}, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = 6 \text{ لـما (7)}$$

$$P(x) < 0, x \in ]-\infty, 6[ \cup ]6, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = \sqrt{3} \text{ لـما (8)}$$

$$P(x) < 0, x \in ]-\infty, \sqrt{3}[ \cup ]\sqrt{3}, +\infty[ \text{ لـما}$$

$$P(x) > 0, x \in ]-\infty, +\infty[ \text{ لـما (9)}$$

$$P(x) = 0, x = \frac{3}{2} \text{ لـما (1) } \mathbf{66}$$

$$P(x) > 0, x \in ]\frac{3}{2}, +\infty[ \text{ لـما}$$

$$P(x) < 0, x \in ]-\infty, \frac{3}{2}[ \text{ لـما}$$

$$P(x) = 0, x = 1 \text{ لـما (2)}$$

$$P(x) > 0, x \in ]-\infty, 1[ \text{ لـما}$$

$$P(x) < 0, x \in ]1, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = 1, x = 2 \text{ لـما (3)}$$

$$P(x) < 0, x \in ]-\infty, 1[ \cup ]1, 2[ \text{ لـما}$$

$$x'' \in ]3 - 3/\sqrt{2}, 3 + 3/\sqrt{2}[$$

$$X' \in ]3 - 3/\sqrt{2}, 3 + 3/\sqrt{2}[$$

(3) تصحيح: المستطيل له نفس محيط المربع.

$$x^2 - 2mx + \frac{1}{3}m^2 = 0 \quad \begin{cases} 2(x' + x'') = 2m \\ x' \times x'' = \frac{1}{3}m^2 \end{cases}$$

$$x'' = \frac{2m - \sqrt{\frac{8}{3}}m}{2} \quad x' = \frac{2m + \sqrt{\frac{8}{3}}m}{2}$$

$$P(x) > 0, x \in ]-\infty, -\frac{1}{2}[ \cup ]2, +\infty[ \text{ لـما (1) } \mathbf{64}$$

$$P(x) < 0, x \in ]-\frac{1}{2}, 2[ \text{ لـما}$$

$$P(x) = 0, x = -\frac{1}{2}, x = 2 \text{ لـما}$$

$$P(x) = 0, x = \frac{3}{2}, x = -1 \text{ لـما (2)}$$

$$P(x) < 0, x \in ]-\infty, -1[ \cup ]\frac{3}{2}, +\infty[ \text{ لـما}$$

$$P(x) > 0, x \in ]-1, \frac{1}{2}[ \text{ لـما}$$

$$P(x) = 0, x = -2, x = 1, x = 3 \text{ لـما (3)}$$

$$P(x) < 0, x \in ]-\infty, -2[ \cup ]1, 3[ \text{ لـما}$$

$$P(x) > 0, x \in ]-2, 1[ \cup ]3, +\infty[ \text{ لـما}$$

$$P(x) = 0, x = -\sqrt{3}, x = \sqrt{3} \text{ لـما (4)}$$

$$P(x) > 0, x \in ]-\infty, -\sqrt{3}[ \cup ]\sqrt{3}, +\infty[ \text{ لـما}$$

$$P(x) < 0, x \in ]-\sqrt{3}, \sqrt{3}[ \text{ لـما}$$

$$P(x) = 0, x = -1, x = 1 \text{ لـما (5)}$$

$$P(x) > 0, x \in ]-\infty, -1[ \cup ]1, +\infty[ \text{ لـما}$$

$$P(x) < 0, x \in ]-1, 1[ \text{ لـما}$$

$$P(x) = 0, x = 0, x = \frac{7}{3} \text{ لـما (6)}$$

$$P(x) > 0, x \in ]-\infty, 0[ \cup ]\frac{7}{3}, +\infty[ \text{ لـما}$$

$$P(x) < 0, x \in ]0, \frac{7}{3}[ \text{ لـما}$$

$$P(x) = 0, x = \frac{3}{2} \text{ لـما (7)}$$

$$P(x) < 0, x \in ]\frac{3}{2}, +\infty[ \text{ لـما}$$

$$P(x) = (x^2 - 1)(x^2 - 2) \quad (1) \quad \text{67}$$

لما

$$P(x) = 0, \quad x = -1, x = -\sqrt{2}, x = 1, x = \sqrt{2}$$

$$P(x) < 0, \quad x \in ]-\sqrt{2}, -1[ \cup ]1, -\sqrt{2}[ \quad \text{لما}$$

لما

$$P(x) > 0, \quad x \in ]-\infty, -\sqrt{2}[ \cup ]-1, 1[ \cup ]\sqrt{2}, +\infty[$$

$$P(x) = (x^2 - 1)(x^2 + 4) \quad (2)$$

$$P(x) = 0, \quad x = -1, x = 1 \quad \text{لما}$$

$$P(x) < 0, \quad x \in ]-1, 1[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]-\infty, -1[ \cup ]1, +\infty[ \quad \text{لما}$$

$$P(x) = (x^2 - 2)(3x^2 + 4) \quad (3)$$

$$P(x) = 0, \quad x = -\sqrt{2}, x = \sqrt{2} \quad \text{لما}$$

$$P(x) < 0, \quad x \in ]-\sqrt{2}, \sqrt{2}[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]-\infty, -\sqrt{2}[ \cup ]\sqrt{2}, +\infty[ \quad \text{لما}$$

$$P(x) = (x-3)\left(x-\frac{1}{2}\right)(2x^2+6) \quad \text{68}$$

$$P(x) = 0, \quad x = 3, x = \frac{1}{2} \quad \text{لما}$$

$$P(x) < 0, \quad x \in \left] \frac{1}{2}, 3 \right[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]-\infty, \frac{1}{2}[ \cup ]3, +\infty[ \quad \text{لما}$$

$$\frac{2}{3} \quad \text{لما } m = 1 \text{ يوجد حل وحيد} \quad (1) \quad \text{69}$$

$$m \neq 1 \quad \text{لما يوجد حلين مختلفين}$$

$$-\frac{3}{2} \quad \text{لما } m = \frac{1}{2} \text{ يوجد حل وحيد} \quad (2)$$

$$m \neq \frac{1}{2} \quad \text{لما يوجد حلين مختلفين.}$$

$$(3) \quad \text{لما } m = 0 \text{ يوجد حل وحيد 2.}$$

$$\text{لما } m \neq 0 \text{ و.}$$

$$m \in \left] -\infty, \frac{-5 - \sqrt{28}}{3} \right[ \cup \left] \frac{-5 + \sqrt{28}}{3}, +\infty \right[$$

لا يوجد حلول

$$P(x) > 0, \quad x \in ]2, +\infty[ \quad \text{لما}$$

$$P(x) = 0, \quad x = 1, x = 2, x = \frac{2}{3} \quad \text{لما} \quad (4)$$

$$P(x) < 0, \quad x \in \left] \frac{2}{3}, 1 \right[ \cup ]2, +\infty[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]-\infty, \frac{2}{3}[ \cup ]1, 2[ \quad \text{لما}$$

(5) لما

$$P(x) = 0, \quad x = -1, x = 0, x = 1, x = 3$$

$$P(x) < 0, \quad x \in ]-1, 0[ \cup ]1, 3[ \quad \text{لما}$$

لما

$$P(x) > 0, \quad x \in ]-\infty, -1[ \cup ]0, 1[ \cup ]3, +\infty[$$

$$P(x) = (2x-3)(x^2+1) \quad (1) \quad \text{67}$$

$$P(x) = 0, \quad x = \frac{3}{2} \quad \text{لما}$$

$$P(x) < 0, \quad x \in \left] -\infty, \frac{3}{2} \right[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in \left] \frac{3}{2}, +\infty \right[ \quad \text{لما}$$

$$P(x) = (x-1)(-x^2+x-5) \quad (2)$$

$$P(x) = 0, \quad x = 1 \quad \text{لما}$$

$$P(x) < 0, \quad x \in ]1, +\infty[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]-\infty, 1[ \quad \text{لما}$$

$$P(x) = (x-1)^2(x-2) \quad (3)$$

$$P(x) = 0, \quad x = 1, x = 2 \quad \text{لما}$$

$$P(x) < 0, \quad x \in ]-\infty, 1[ \cup ]1, 2[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in ]2, +\infty[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in \left] -\infty, \frac{2}{3} \right[ \cup ]1, 2[ \quad (4)$$

$$P(x) = 0, \quad x = 1, x = 2, x = \frac{2}{3} \quad \text{لما}$$

$$P(x) < 0, \quad x \in \left] \frac{2}{3}, 1 \right[ \cup ]1, +\infty[ \quad \text{لما}$$

$$P(x) > 0, \quad x \in \left] -\infty, \frac{2}{3} \right[ \cup ]1, 2[ \quad \text{لما}$$

$$P(x) = x(x-1)(x^2-2x-3) \quad (5)$$

لما

$$P(x) = 0, \quad x = -1, x = 0, x = 1, x = 3$$

$$P(x) < 0, \quad x \in ]-1, 0[ \cup ]1, 3[ \quad \text{لما}$$

لما

$$P(x) > 0, \quad x \in ]-\infty, -1[ \cup ]0, 1[ \cup ]3, +\infty[$$

$$S = \left\{ \frac{1-\sqrt{7}}{2}, \frac{1+\sqrt{7}}{2} \right\} \quad (1) \quad 74$$

$$S = \{-1-\sqrt{2}, -1+\sqrt{2}\} \quad (2)$$

$$S = \left\{ -2, \frac{1}{6} \right\} \quad (3)$$

$$S = \phi \quad (4)$$

$$S = \phi \quad (5)$$

$$S = \left\{ \frac{2+\sqrt{10}}{3} \right\} \quad (1) \quad 75$$

$$S = \left\{ \frac{30-\sqrt{6}}{24}, \frac{30+\sqrt{6}}{24} \right\} \quad (2)$$

$$S = \left\{ \frac{1}{2}, \frac{9}{2} \right\} \quad (3)$$

$$S = \{5, 8\} \quad (4)$$

$$S = \{197, 549\} \quad (5)$$

$$S = ]-\infty, -3[ \cup \left[ -\frac{7}{3}, +\infty[ \quad (1) \quad 76$$

$$S = [1, +\infty[ \quad (2)$$

$$S = \{-2\} \quad (3)$$

$$S = \left\{ \frac{-3+\sqrt{21}}{2} \right\} \quad (1) \quad 77$$

$$S = \{-2-\sqrt{8}, -2+\sqrt{8}\} \quad (2)$$

$$S = \{3, 4\} \quad (1) \quad 78$$

$$S = \{4, 9\} \quad (2)$$

$$S = \{4\} \quad (3)$$

$$S = \left\{ 3, \frac{1}{2} \right\} \quad (4)$$

79 (2) بعد النشر و التبسيط نجد أن المعادلتين متكافئتين.

$$S = \{4\} \quad (3)$$

$$S = \left\{ \frac{1}{2}, 3 \right\} \quad (4)$$

$$S = \{1\} \quad (1) \quad 80$$

$$S = ]-\infty, 1[ \quad (2)$$

$$x' \leq \frac{x' + 4x''}{5} \leq x'' \quad \text{نفرض أن:} \quad 81$$

$$\text{لدينا: } x' \leq \frac{x' + 4x''}{5} \text{ معناه:}$$

$$x \leq x'' \text{ بعد التبسيط.}$$

$$\text{و نفس الشيء مع } \frac{x' + 4x''}{5} \leq x''$$

$$m \in \left[ \frac{-5-\sqrt{28}}{3}, \frac{-5+\sqrt{28}}{3} \right]$$

يوجد حلين متميزين.

$$m = \frac{-5+\sqrt{28}}{3} \text{ أو } m = \frac{-5-\sqrt{28}}{3}$$

يوجد حل مضاعف،

$$(4) \text{ لما } m = -1 \text{ يوجد حلين } 1, \frac{3}{4}$$

لما  $m \neq -1$  المعادلة تصبح من الدرجة الثالثة تقبل تقبل ثلاث حلول متميزة.

70 الشكل الأول:

$$f(x) = 0, \quad x = -3, x = 1, x = 4$$

$$f(x) < 0, \quad x \in ]-\infty, -3[ \cup ]1, 4[$$

$$f(x) > 0, \quad x \in ]-3, 1[ \cup ]4, +\infty[$$

الشكل الثاني:

$$f(x) = 0, \quad x = -2, x = -1, x = 3, x = 4$$

$$f(x) < 0, \quad x \in ]-2, -1[ \cup ]3, 4[$$

$$f(x) > 0, \quad x \in ]-\infty, -2[ \cup ]-1, 3[ \cup ]4, +\infty[$$

$$S = ]-\infty, -3[ \cup \left[ \frac{1}{2}, +\infty[ \quad (1) \quad 71$$

$$S = \left[ -2, \frac{1}{3} \right] \quad (2)$$

$$S = \left] -3, \frac{5}{2} \right[ \quad (3)$$

$$S = \left] -\infty, \frac{5}{3} \right[ \cup ]2, +\infty[ \quad (4)$$

$$S = \mathbb{R} \quad (5)$$

$$S = \phi \quad (6)$$

$$S = \mathbb{R} \quad (7)$$

$$S = \phi \quad (8)$$

$$S = \phi \quad (9)$$

$$S = ]-\infty, 1[ \quad (1) \quad 72$$

$$S = [1, -\infty[ \quad (2)$$

$$S = ]-1, 1[ \cup ]2, +\infty[ \quad (3)$$

$$(4)$$

$$S = ]-\infty, -\sqrt{3}[ \cup ]-\sqrt{2}, \sqrt{2}[ \cup ]\sqrt{3}, +\infty[ \quad (5)$$

$$D_f = \mathbb{R} - \left\{ \frac{1}{2}, 2 \right\} \quad (1) \quad 73$$

$$S = \left\{ \frac{1}{5} \right\} \quad (2)$$