

$$1) \begin{array}{r|rr|r} & 6y & 14y^2 & -9y^3 \\ -3y & & -18y^2 & +12y^3 \\ \hline & 6y & -4y^2 & 3y^3 \end{array}$$

$$Q = 6y - 4y^2$$

$$R = 3y^3$$

$$2) \begin{array}{r|l} 2e^5 - 15e^3 + 7e + 3 & e^2 - 7 \\ -2e^5 + 14e^3 & \hline // & -e^3 + 7e + 3 \\ & +e^3 - 7e \\ \hline // & // = 3 \end{array} \quad \begin{array}{l} Q = 2e^3 - e \\ R = 3 \end{array}$$

$$3) \begin{array}{r|rrrr|r} & 1 & 0 & -14 & 7 & \\ -4 & & -4 & 16 & -8 & \\ \hline & 1 & -4 & 2 & -1 & \end{array} \quad \begin{array}{l} Q = x^2 - 4x + 2 \\ R = -1 \end{array}$$

$$4) \begin{array}{r|l} 6e^3 - 11e^2b + 8eb^2 - 9b^3 & 3e^2 - eb + 2b^2 \\ -6e^3 + 2e^2b - 4eb^2 & \hline // & 2e - 3b \\ & -9e^2b + 4eb^2 - 9b^3 \\ & +9e^2b - 3eb^2 + 6b^3 \\ \hline // & Qb^2 - 3b^3 \end{array} \quad \begin{array}{l} Q = (2e - 3b) \\ R = (eb^2 - 3b^3) \end{array}$$

$$5) 7K(-1)^3 - 9K(-1)^2 - 9K(-1) + 3 = 8$$

$$-7K - 9K + 9K = 8 - 3$$

$$-7K = 5$$

$$K = -\frac{5}{7}$$

6)

$$6x - \left(\frac{1}{8}x^3 - \frac{1}{9}x^2 - x \cdot \left(-\frac{1}{9}x^2 + \frac{1}{2}x + 2 \right) \right) = 1 + 3 \cdot \left(-\frac{1}{2}x \right) + 3 \left(-\frac{1}{2}x \right)^2 - \frac{1}{8}x^3 +$$

$$- \left[\frac{1}{9}x^2 + 2 \left(\frac{1}{2}x \right) (-3) + 9 \right]$$

$$6x - \left(\frac{1}{8}x^3 - \frac{1}{2}x^2 - \frac{1}{2}x + 2 \right) = 1 - \frac{3}{2}x + \frac{3}{4}x^2 - \frac{1}{8}x^3 - \left(\frac{1}{9}x^2 - 3x + 9 \right)$$

$$= 6x - \frac{1}{8}x^3 + \frac{1}{2}x^2 + \frac{1}{2}x - 2 = 1 - \frac{3}{2}x + \frac{3}{4}x^2 - \frac{1}{8}x^3 - \frac{1}{9}x^2 + 3x - 9$$

$$\frac{1}{2}x^2 - \frac{3}{9}x^2 + \frac{1}{9}x^2 + 6x + \frac{1}{2}x + \frac{3}{2}x - 3x = 2 + 1 - 9$$

$$\frac{2 - 3 + 1}{9}x^2 + \frac{12 + 1 + 3 - 6}{2}x =$$

$$0x^2 + \frac{10}{2}x = -6$$

$$5x = -6$$

$$x = -\frac{6}{5}$$

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$$6x + 2x + 3x = 5x$$

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$$\frac{1}{2}x^2 - \frac{1}{2}x^2 = 0$$