

2.2.6

$$\begin{aligned}
 k) \quad & \underbrace{1+x+x^2} + \underbrace{x^3+x^4+x^5} \\
 &= (1+x) + x^2(1+x) + x^4(1+x) \\
 &= (1+x)(1+x^2+x^4)
 \end{aligned}$$

$$\begin{aligned}
 &= (1+x+x^2) + x^3(1+x+x^2) \\
 &= (1+x+x^2)(1+x^3) \\
 &= (1+x+x^2)(1+x)(1-x+x^2) \\
 &= \underbrace{(x^2+x+1)}_{\Delta=1-4=-3<0} \underbrace{(x+1)}_{\Delta=-3<0} \underbrace{(x^2-x+1)}_{\Delta=-3<0} \quad (\text{pas factorisable})
 \end{aligned}$$

$$\begin{aligned}
 g) \quad & \underbrace{\frac{xy}{2} - \frac{x}{4}} + \underbrace{\frac{yz}{3} - \frac{z}{6}} \\
 &= \left(x\left(\frac{y}{2} - \frac{1}{4}\right) + z\left(\frac{y}{3} - \frac{1}{6}\right) \right) \\
 &= \frac{x}{2}\left(y - \frac{1}{2}\right) + \frac{z}{3}\left(y - \frac{1}{2}\right) \\
 &= \underline{\underline{\left(y - \frac{1}{2}\right)\left(\frac{x}{2} + \frac{z}{3}\right)}}
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{6xy - 3x + 4yz - 2z}{12} \\
 &= \frac{1}{12} \left(\underbrace{6xy - 3x} + \underbrace{4yz - 2z} \right) \\
 &= \frac{1}{12} \left(3x(2y-1) + 2z(2y-1) \right) \\
 &= \underline{\underline{\frac{1}{12} (2y-1)(3x+2z)}}
 \end{aligned}$$

$$\begin{aligned}
 l) \quad & \underline{8y^4 - 8y^3 + y - 1} \\
 &= 8y^3(y-1) + (y-1) \quad \neq \\
 &= (y-1)(8y^3 + 1) \quad \text{---} \quad (2y+1)^3 = 8y^3 + 12y^2 + 6y + 1 \\
 &= \underline{\underline{(y-1)(2y+1)(4y^2 - 2y + 1)}} \quad \Delta = 4 - 16 = -12 < 0
 \end{aligned}$$

$$\begin{aligned}
 j) \quad & \underline{4x^2 + 2x - 3y^2 - 3y} \\
 &= \cancel{2x(2x+1)} - \cancel{3y(3y+1)} \quad \left| \begin{array}{l} \text{GR} \\ = (4x^2 - 9y^2) + (2x - 3y) \\ \text{PR} \\ = (2x+3y)(2x-3y) + (2x-3y) \\ \text{MEE} \\ = (2x-3y)[(2x+3y) + 1] \\ = (2x-3y)(2x+3y+1) \end{array} \right.
 \end{aligned}$$