問題 **2.7.**

(1) $f(x) = x^3 + 3x^2 - x - 3 = (x-1)(x+1)(x+3)$

(2) $f(x) = x^2 - 8x + 8 = (x-2)(x^2+2x-4)$ [*1]

(3) $f(x) = 2x^3 + 3x^2 - 8x + 3 = (x-1)(x+3)(2x-1)$

(4) $f(x) = x^4 - 6x^3 + x^2 + 24x - 20 = (x-1)(x-2)(x-5)(x+2)$

問題 **2.8.**

(1) $\dfrac{4x^3+8xy^2}{12x^2} = \dfrac{4x(x^2+2y^2)}{4x \times 3x} = \dfrac{x^2+2y^2}{3x}$

(2) $\dfrac{2x-4}{2x^2-3x-2} = \dfrac{2(x-2)}{(2x+1)(x-2)} = \dfrac{2}{2x+1}$

(3) $\dfrac{x^2-(y+z)^2}{(x+y)^2-z^2} = \dfrac{\{x-(y+z)\}\{x+(y+z)\}}{\{(x+y)-z\}\{(x+y)+z\}} = \dfrac{x-y-z}{x+y-z}$

[*1] $x^2+2x-4 = (x+1+\sqrt{5})(x+1-\sqrt{5})$ と因数分解できますが，これには平方完成の考え方が必要です；$x^2+2x-4 = (x+1)^2-5 = (x+1)^2-(\sqrt{5})^2 = (x+1+\sqrt{5})(x+1-\sqrt{5})$