

BM 171E, 17.11.2016

(1)

a)

$$\frac{\frac{1}{\frac{e}{\frac{b}{c}}}} = \frac{\frac{1}{\frac{a}{\frac{b}{\frac{c}{1}}}} = \frac{1}{\frac{a}{b} \cdot \frac{1}{c}} = \frac{1}{\frac{a}{bc}}$$
$$= \underline{\underline{\frac{bc}{a}}}$$

b)

$$\frac{\frac{\frac{a}{b}}{\frac{c}{\frac{d}{e}}}} = \frac{\frac{\frac{a}{b}}{\frac{c}{\frac{1}{\frac{d}{e}}}} = \frac{\frac{a}{b}}{\frac{c}{1} \cdot \frac{e}{d}} = \frac{\frac{a}{b}}{\frac{ce}{d}}$$
$$= \frac{a}{b} \cdot \frac{d}{ce} = \underline{\underline{\frac{ad}{bce}}}$$

(2)

$$\frac{\frac{x^2+x-2}{x^2+5x+6}}{\frac{x^2-2x+1}{x^2+2x-3}} = \frac{\frac{(x-1)(x+2)}{(x+2)(x+3)}}{\frac{(x-1)^2}{(x+3)(x-1)}} = \frac{x-1}{x+3} \cdot \frac{x+3}{x-1}$$
$$= \underline{\underline{1}}$$

$$\textcircled{5} \quad \frac{2a^2 - 4ab + 2b^2}{\frac{4a^2 - 4b^2}{2a + 2b}} = \frac{2(a^2 - 2ab + b^2)}{\frac{4(a^2 - b^2)}{2(a+b)}}$$

$$= \frac{\cancel{2}(a-b)^2}{1} \cdot \frac{\cancel{2}(a+b)}{\cancel{4}(a+b)(a-b)}$$

$$= \underline{\underline{a-b}}$$

$$\textcircled{6} \quad 6ac + 8ad + 12bc + 16bd$$

$$= 2(3ac + 4ad + 6bc + 8bd)$$

$$= 2(a(3c + 4d) + 2b(3c + 4d))$$

$$= 2(a + 2b)(3c + 4d)$$

$$\frac{6ac + 8ad + 12bc + 16bd}{\frac{9c^2 - 16d^2}{\frac{a^2 - 4b^2}{6c - 8d}}} = \frac{2(a+2b)(\cancel{3c+4d})}{(\cancel{3c+4d})(3c-4d)} \cdot \frac{(a+2b)(a-2b)}{2(3c-4d)}$$

$$= \frac{2(a+2b)}{3c-4d} \cdot \frac{(a+2b)(a-2b)}{2(3c-4d)}$$

$$= \frac{\cancel{2}(a+2b)}{(\cancel{3c-4d})} \cdot \frac{\cancel{2}(\cancel{3c-4d})}{(a+2b)(a-2b)} = 4 \cdot \frac{1}{a-2b}$$

$$= \underline{\underline{\frac{4}{a-2b}}}$$