

$$1) \frac{\sqrt{2} + \sqrt{3}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2 + \sqrt{6}}{2}$$

$$2) \frac{3\sqrt{12} - 6 + 6 - \sqrt{12}}{\sqrt{6}} = \frac{2\sqrt{12}}{\sqrt{6}} = \begin{cases} 2\sqrt{\frac{12}{6}} = 2\sqrt{2} \\ \frac{2\sqrt{6} \cdot \sqrt{2}}{\sqrt{6}} = 2\sqrt{2} \\ \frac{4\sqrt{3}}{\sqrt{6}} = \begin{cases} \frac{4\sqrt{3}}{\sqrt{2} \cdot \sqrt{2}} = \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2} \\ \frac{4\sqrt{3}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{4\sqrt{18}}{6} = \frac{4 \cdot 3\sqrt{2}}{6} = 2\sqrt{2} \end{cases} \end{cases}$$

$$3) \frac{\sqrt[4]{2^4 \cdot 3a^4 b^7}}{2ab^2} = \frac{\sqrt[4]{3b^3}}{\sqrt[4]{b^2}} = \frac{\sqrt[4]{3b^3}}{b}$$

$$4) \frac{2}{1-\sqrt{3}} \cdot \frac{1+\sqrt{3}}{1+\sqrt{3}} = \frac{2(1+\sqrt{3})}{1-3} = \frac{\cancel{2}(1+\sqrt{3})}{\cancel{2}} = -1-\sqrt{3}$$

$$5) \frac{2\sqrt{10} + \sqrt{10}}{\sqrt{2} + \sqrt{5}} = \frac{3\sqrt{10}}{\sqrt{2} + \sqrt{5}} \cdot \frac{\sqrt{2} - \sqrt{5}}{\sqrt{2} - \sqrt{5}} = \frac{3\sqrt{20} - 3\sqrt{50}}{2-5} =$$

$$= \frac{6\sqrt{5} - 15\sqrt{2}}{-3} = \frac{-\cancel{3}(-2\sqrt{5} + 5\sqrt{2})}{-\cancel{3}} = 5\sqrt{2} - 2\sqrt{5}$$

$$6) \frac{\sqrt{6}}{\sqrt{3} - \sqrt{2}} \cdot \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} + \sqrt{2}} - \frac{5\sqrt{3}}{1-\sqrt{6}} \cdot \frac{1+\sqrt{6}}{1+\sqrt{6}} =$$

$$= \frac{\sqrt{18} + \sqrt{12}}{3-2} - \frac{5\sqrt{3} + 5\sqrt{18}}{1-6} =$$

$$= \frac{3\sqrt{2} + 2\sqrt{3}}{1} \ominus \frac{\cancel{5}(\sqrt{3} + \sqrt{18})}{\cancel{5}} =$$

$$= 3\sqrt{2} + 2\sqrt{3} + \sqrt{3} + \sqrt{18} =$$

$$= 3\sqrt{2} + 2\sqrt{3} + \sqrt{3} + 3\sqrt{2} =$$

$$= 6\sqrt{2} + 3\sqrt{3} = 3(2\sqrt{2} + \sqrt{3})$$

$$7) \frac{5}{2\sqrt{2} + \sqrt{3}} \cdot \frac{2\sqrt{2} - \sqrt{3}}{2\sqrt{2} - \sqrt{3}} = \frac{\cancel{5}(2\sqrt{2} - \sqrt{3})}{\cancel{5}} = 2\sqrt{2} - \sqrt{3}$$