① $7\sqrt{2} - 3\sqrt{8} + 4\sqrt{18} = 7\sqrt{2} - 6\sqrt{2} + 12\sqrt{2} = 13\sqrt{2}$

$(\sqrt{90} - \sqrt{40}) \cdot \sqrt{10} = (3\sqrt{10} - 2\sqrt{10}) \cdot \sqrt{10} = \sqrt{10} \cdot \sqrt{10} = 10$

$(3\sqrt{5} - 2)^2 = 45 + 4 - 2 \cdot 2 \cdot 3\sqrt{5} = 49 - 12\sqrt{5}$

$(7\sqrt{2} - 3\sqrt{3})(7\sqrt{2} + 3\sqrt{3}) = 49 \cdot 2 - 9 \cdot 3 = 98 - 27 = 71$

② $3\sqrt{2} > 2\sqrt{3}$

$\sqrt{18} > \sqrt{12}$

$6\sqrt{\frac{2}{3}} > 4\sqrt{\frac{3}{2}}$

$\sqrt{\frac{36 \cdot 2}{3}} \quad \sqrt{\frac{16 \cdot 3}{2}}$

$\sqrt{24} > \sqrt{18}$

③ $\frac{\sqrt{a}+1}{a-1} = \frac{\sqrt{a}+1}{(\sqrt{a}+1)(\sqrt{a}-1)} = \frac{1}{\sqrt{a}-1}$

④ $\frac{3}{2\sqrt{6}} = \frac{3\sqrt{6}}{2 \cdot 6} = \frac{\sqrt{6}}{4}$

$\frac{10}{\sqrt{14}-2} = \frac{10(\sqrt{14}+2)}{14-4} = \frac{10(\sqrt{14}+2)}{10} = \sqrt{14}+2$

$\frac{15}{\sqrt{33}+\sqrt{3}} = \frac{15(\sqrt{33}-\sqrt{3})}{33+3} = \frac{15(\sqrt{33}-\sqrt{3})}{36} = \frac{5(\sqrt{33}-\sqrt{3})}{12}$

⑥ $\left(\frac{\sqrt{6}}{\sqrt{a}-\sqrt{6}} + \frac{\sqrt{a}-\sqrt{6}}{\sqrt{6}}\right) : \frac{\sqrt{6}}{\sqrt{a}-\sqrt{6}} = \frac{\sqrt{a}\cdot\sqrt{6} + a - \sqrt{a}\cdot\sqrt{6}}{\sqrt{6}(\sqrt{a}-\sqrt{6})} \cdot \frac{\sqrt{a}-\sqrt{6}}{\sqrt{6}} = \frac{a}{6}$