**1.6** 1) $\left(\sqrt{10+\sqrt{2}}+\sqrt{10-\sqrt{2}}\right)^2 = 10+\sqrt{2}+2\sqrt{(10+\sqrt{2})(10-\sqrt{2})}+10-\sqrt{2}$

$$= 20+2\sqrt{10^2-(\sqrt{2})^2}$$

$$= 20+2\sqrt{98}$$

$$= 20+2\cdot 7\sqrt{2}$$

$$= 20+14\sqrt{2}$$

Donc $\sqrt{10+\sqrt{2}}+\sqrt{10-\sqrt{2}} = \sqrt{20+14\sqrt{2}}$

2) $\left(\sqrt{5+\sqrt{21}}+\sqrt{5-\sqrt{21}}\right)^2 = 5+\sqrt{21}+2\sqrt{(5+\sqrt{21})(5-\sqrt{21})}+5-\sqrt{21}$

$$= 10+2\sqrt{5^2-(\sqrt{21})^2}$$

$$= 10+2\sqrt{4} = 10+2\cdot 2$$

$$= 14$$

D'où $\sqrt{5+\sqrt{21}}+\sqrt{5-\sqrt{21}} = \sqrt{14}$