a) $\dfrac{\sqrt{2}-1}{(\sqrt{2}-1)(\sqrt{2}+1)} = \dfrac{\sqrt{2}-1}{2-1} = \sqrt{2}-1$

b) $\dfrac{(x+y)(\sqrt{x}-\sqrt{y})}{(\sqrt{x}+\sqrt{y})(\sqrt{x}-\sqrt{y})} = \dfrac{(x+y)(\sqrt{x}-\sqrt{y})}{x-y} = \dfrac{x\sqrt{x}-x\sqrt{y}+y\sqrt{x}-y\sqrt{y}}{x-y}$

c) $\dfrac{(a-1)(\sqrt{a}+1)}{(\sqrt{a}-1)(\sqrt{a}+1)} = \dfrac{(a-1)(\sqrt{a}+1)}{(a-1)} = \sqrt{a}+1$

d) $\dfrac{(\sqrt{x}+\sqrt{y})(\sqrt{x}+\sqrt{y})}{(\sqrt{x}-\sqrt{y})(\sqrt{x}+\sqrt{y})} = \dfrac{x+y+2\sqrt{xy}}{x-y}$

e) $\dfrac{(2\sqrt{3}+\sqrt{5})}{(2\sqrt{3}-\sqrt{5})(2\sqrt{3}+\sqrt{5})} = \dfrac{2\sqrt{3}+\sqrt{5}}{12-5} = \dfrac{2\sqrt{3}+\sqrt{5}}{7}$

f) $\dfrac{(3\sqrt{2}+2\sqrt{3})^2}{18-12} = \dfrac{18+12+12\sqrt{6}}{6} = \dfrac{30+12\sqrt{6}}{6} = 5+2\sqrt{6}$

g) $\dfrac{1}{\sqrt{2}} + \dfrac{1}{\sqrt{2}-1} + \dfrac{1}{\sqrt{2}+1} = \dfrac{(\sqrt{2}-1)(\sqrt{2}+1)+\sqrt{2}(\sqrt{2}+1)+\sqrt{2}(\sqrt{2}-1)}{\sqrt{2}(\sqrt{2}-1)(\sqrt{2}+1)} = \dfrac{(2-1)+2+\sqrt{2}+2-\sqrt{2}}{\sqrt{2}(2-1)} = \dfrac{5}{\sqrt{2}} = \dfrac{5\sqrt{2}}{2}$

h) $\dfrac{\sqrt{x}+\sqrt{y}+\sqrt{x}-\sqrt{y}}{x-y} = \dfrac{2\sqrt{x}}{x-y}$