Exercise 1E

Question 1:
On multiplying the numerator and denominator of the given number by $\sqrt{7}$, we get

$$\frac{1}{\sqrt{7}} = \frac{1}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{7}.$$

Question 2:
On multiplying the numerator and denominator of the given number by $\sqrt{3}$, we get

$$\frac{\sqrt{5}}{2\sqrt{3}} = \frac{\sqrt{5}}{2\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{15}}{2 \times 3} = \frac{\sqrt{15}}{6}.$$

Question 3:
If a and b are integers, then
$(a+\sqrt{b})$ and $(a-\sqrt{b})$ are rationalising factor of each other,
as $(a+\sqrt{b})(a-\sqrt{b}) = (a^2 - b)$, which is rational.
Therefore, we have,

$$\frac{1}{(2+\sqrt{3})} = \frac{1}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}} = \frac{2-\sqrt{3}}{(2)^2 - (\sqrt{3})^2} = \frac{2-\sqrt{3}}{4-3}$$

$$= \frac{2-\sqrt{3}}{1} = 2 - \sqrt{3}.$$

Question 4:
If a and b are integers, then
$(a+\sqrt{b})$ and $(a-\sqrt{b})$ are rationalising factor of each other,
as $(a+\sqrt{b})(a-\sqrt{b}) = (a^2 - b)$, which is rational.
Therefore, we have,

$$\frac{1}{(\sqrt{5}-2)} = \frac{1}{\sqrt{5}-2} \times \frac{\sqrt{5}+2}{\sqrt{5}+2} = \frac{\sqrt{5}+2}{(\sqrt{5})^2 - (2)^2} = \frac{\sqrt{5}+2}{5-4}$$

$$= \frac{\sqrt{5}+2}{1} = \sqrt{5} + 2.$$

********** END **********