

Exercice 1

- 1) $\frac{\sqrt{2}}{\sqrt{9}} \times \sqrt{2} = \frac{\sqrt{2 \times 2}}{3} = \frac{2}{3}$
- 2) $\frac{1}{\sqrt{5}} \times \frac{\sqrt{45}}{7} = \frac{1}{\sqrt{5}} \times \frac{3\sqrt{5}}{7} = \frac{3}{7}$
- 3) $3\sqrt{7} \times \frac{1}{\sqrt{28}} = \frac{3\sqrt{7}}{2\sqrt{7}} = \frac{3}{2}$
- 4) $\frac{\sqrt{2}}{\sqrt{5}} \times \frac{\sqrt{150}}{\sqrt{15}} = \frac{\sqrt{2}}{\sqrt{5}} \times \frac{5\sqrt{2} \times \sqrt{3}}{\sqrt{5} \times \sqrt{3}} = 2$
- 5) $\sqrt{2} \times \sqrt{6} = \sqrt{2} \times \sqrt{2} \times \sqrt{3} = 2\sqrt{3}$
- 6) $\sqrt{5} \times \sqrt{15} = \sqrt{5} \times \sqrt{3} \times \sqrt{5} = 5\sqrt{3}$
- 7) $\sqrt{300} = \sqrt{100 \times 3} = 10\sqrt{3}$
- 8) $\sqrt{7} \times \sqrt{28} = \sqrt{7} \times \sqrt{4} \times \sqrt{7} = 14$
- 9) $3\sqrt{8} \times \sqrt{18} = 3\sqrt{2} \times \sqrt{4} \times \sqrt{9} \times \sqrt{2} = 36$
- 10) $\sqrt{5^2 - 2^2} = \sqrt{25 - 4} = \sqrt{21}$
- 11) $\sqrt{(1-2)^2 + (4-1)^2} = \sqrt{1+9} = \sqrt{10}$
- 12) $\sqrt{(5-2)^2} = 5 - 2 = 3$

Exercice 2

- 1) $\sqrt{5} - 3\sqrt{5} + \sqrt{75} = -2\sqrt{5} + 5\sqrt{3}$
- 2) $\sqrt{275} - 3\sqrt{44} + 5\sqrt{99} = \sqrt{25 \times 11} - 3\sqrt{4 \times 11} + 5\sqrt{9 \times 11} = 5\sqrt{11} - 3 \times 2\sqrt{11} + 5 \times 3\sqrt{11} = 14\sqrt{11}$
- 3) $\frac{\sqrt{5}}{\sqrt{8}} \times \sqrt{2} \times \frac{1}{\sqrt{20}} = \frac{\sqrt{5}}{2\sqrt{2}} \times \sqrt{2} \times \frac{1}{2\sqrt{5}} = \frac{1}{4}$
- 4) $(3\sqrt{2} - 1)(\sqrt{2} + 1) = 3\sqrt{2}\sqrt{2} + 3\sqrt{2} - \sqrt{2} - 1 = 5 + 2\sqrt{2}$
- 5) $(2\sqrt{7} + 1)^2 + (\sqrt{3} - 1)(\sqrt{3} + 1) = (2\sqrt{7})^2 + 4\sqrt{7} + 1 + 3 - 1 = 28 + 4\sqrt{7} + 3 = 31 + 4\sqrt{7}$
- 6) $(2 - 3\sqrt{5})(15 + 2\sqrt{5}) = 30 + 4\sqrt{5} - 3\sqrt{5} \times 15 - 6\sqrt{5}\sqrt{5} = -41\sqrt{5}$

Exercice 3

- 1) $\frac{\sqrt{6}}{\sqrt{72}} = \frac{\sqrt{6}}{6\sqrt{2}} = \frac{\sqrt{2}\sqrt{3}}{6\sqrt{2}} = \frac{\sqrt{3}}{6}$
- 2) $\frac{\sqrt{20}}{\sqrt{45}} = \frac{2\sqrt{5}}{3\sqrt{5}} = \frac{2}{3}$
- 3) $\frac{\sqrt{8}}{\sqrt{18}} = \frac{2\sqrt{2}}{3\sqrt{2}} = \frac{2}{3}$
- 4) $\frac{5\sqrt{3}}{3\sqrt{5}} = \frac{5\sqrt{3}\sqrt{5}}{3\sqrt{5}\sqrt{5}} = \frac{5\sqrt{15}}{15}$
- 5) $-\frac{25}{\sqrt{6}} = -\frac{25\sqrt{6}}{\sqrt{6}\sqrt{6}} = -\frac{25\sqrt{6}}{6}$

$$6) \frac{2+\sqrt{5}}{1-\sqrt{3}} = \frac{(2+\sqrt{5})(1+\sqrt{3})}{(1-\sqrt{3})(1+\sqrt{3})} = \frac{2+\sqrt{5}+2\sqrt{3}+\sqrt{15}}{1-3} = -\left(\frac{2+\sqrt{5}+2\sqrt{3}+\sqrt{15}}{2}\right)$$

$$7) \frac{\sqrt{7}+\sqrt{5}}{\sqrt{3}+\sqrt{2}} = \frac{(\sqrt{7}+\sqrt{5})(\sqrt{3}-\sqrt{2})}{(\sqrt{3}+\sqrt{2})(\sqrt{3}-\sqrt{2})} = \frac{\sqrt{21}-\sqrt{14}+\sqrt{15}-\sqrt{10}}{1} = \sqrt{21}-\sqrt{14}+\sqrt{15}-\sqrt{10}$$

$$8) \frac{12}{\sqrt{2}-\sqrt{7}} = \frac{12(\sqrt{2}+\sqrt{7})}{(\sqrt{2}-\sqrt{7})(\sqrt{2}+\sqrt{7})} = \frac{12(\sqrt{2}+\sqrt{7})}{-5} = -\frac{12(\sqrt{2}+\sqrt{7})}{5}$$