

平方根・分母の有理化 No.1

次の式を、分母を有理化して簡単にしなさい。

$$(1) \frac{3}{4\sqrt{6}}$$

$$(2) \frac{1}{\sqrt{3} + \sqrt{2}}$$

$$(3) \frac{3}{\sqrt{6} - 2}$$

$$(4) \frac{2\sqrt{3}}{\sqrt{5} + 1} - \frac{\sqrt{5}}{\sqrt{3} + 1}$$

$$(5) \frac{4}{1 + \sqrt{2} + \sqrt{3}}$$

平方根・分母の有理化 No.1 (解答)

$$(1) \frac{3}{4\sqrt{6}} \times \frac{\sqrt{6}}{\sqrt{6}} = \frac{3\sqrt{6}}{4 \cdot 6} = \frac{\sqrt{6}}{8}$$

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

$$(3) \frac{3}{\sqrt{6}-2} \times \frac{\sqrt{6}+2}{\sqrt{6}+2} \\ = \frac{3(\sqrt{6}-2)}{6-4} = \frac{3\sqrt{6}-6}{2}$$

$$(4) \frac{2\sqrt{3}}{\sqrt{5}+1} - \frac{\sqrt{5}}{\sqrt{3}+1} \\ = \frac{2\sqrt{3}}{\sqrt{5}+1} \times \frac{\sqrt{5}-1}{\sqrt{5}-1} - \frac{\sqrt{5}}{\sqrt{3}+1} \times \frac{\sqrt{3}-1}{\sqrt{3}-1} \\ = \frac{2\sqrt{15}-2\sqrt{3}}{5-1} - \frac{\sqrt{15}-\sqrt{5}}{3-1} \\ = \frac{\sqrt{5}-\sqrt{3}}{2}$$

$$(5) \frac{4}{(1+\sqrt{2})+\sqrt{3}} \times \frac{(1+\sqrt{2})-\sqrt{3}}{(1+\sqrt{2})-\sqrt{3}} \\ = \frac{4(1+\sqrt{2}-\sqrt{3})}{(1+\sqrt{2})^2 - (\sqrt{3})^2} \\ = \frac{4(1+\sqrt{2}-\sqrt{3})}{2\sqrt{2}} \\ = \frac{2(1+\sqrt{2}-\sqrt{3})}{\sqrt{2}} \\ = 2 + \sqrt{2} - \sqrt{6}$$

平方根・分母の有理化 No.2

次の式を、分母を有理化して簡単にしなさい。

$$(1) \frac{14}{3\sqrt{7}}$$

$$(2) \frac{1}{\sqrt{5} + \sqrt{6}}$$

$$(3) \frac{2}{2 + \sqrt{2}}$$

$$(4) \frac{\sqrt{3}}{2 - \sqrt{3}} + \frac{\sqrt{3}}{\sqrt{3} - 2}$$

$$(5) \frac{2\sqrt{3}}{\sqrt{2} + \sqrt{3} + \sqrt{5}}$$

平方根・分母の有理化 No.2 (解答)

$(1) \frac{14}{3\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} = \frac{2\sqrt{7}}{3}$	$(2) \frac{1}{\sqrt{5} + \sqrt{6}} \times \frac{\sqrt{5} - \sqrt{6}}{\sqrt{5} - \sqrt{6}}$ $= \frac{\sqrt{5} - \sqrt{6}}{5 - 6} = \sqrt{6} - \sqrt{5}$
$(3) \frac{2}{2 + \sqrt{2}} \times \frac{2 - \sqrt{2}}{2 - \sqrt{2}}$ $= \frac{2(2 - \sqrt{2})}{4 - 2} = 2 - \sqrt{2}$	$(4) \frac{\sqrt{3}}{2 - \sqrt{3}} + \frac{\sqrt{3}}{\sqrt{3} - 2}$ $= \frac{\sqrt{3}}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} + \frac{\sqrt{3}}{\sqrt{3} - 2} \times \frac{\sqrt{3} + 2}{\sqrt{3} + 2}$ $= \frac{2\sqrt{3} + 3}{4 - 3} + \frac{3 + 2\sqrt{3}}{3 - 4}$ $= 2\sqrt{3} + 3 - 3 - 2\sqrt{3}$ $= 0$
$(5) \frac{2\sqrt{3}}{\sqrt{2} + \sqrt{3} + \sqrt{5}} \times \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{\sqrt{2} + \sqrt{3} - \sqrt{5}}$ $= \frac{2\sqrt{3}(\sqrt{2} + \sqrt{3} - \sqrt{5})}{(\sqrt{2} + \sqrt{3})^2 - (\sqrt{5})^2}$ $= \frac{2\sqrt{3}(\sqrt{2} + \sqrt{3} - \sqrt{5})}{2 + 2\sqrt{6} + 3 - 5}$ $= \frac{\sqrt{2} + \sqrt{3} - \sqrt{5}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$ $= \frac{2 + \sqrt{6} - \sqrt{10}}{2}$	