練習問題の解答

5 (1) $x^2+4x=A$ とおく。

$(x^2+4x)^2-8(x^2+4x)-48$

$=A^2-8A-48$

$=(A+4)(A-12)$

$=(x^2+4x+4)(x^2+4x-12)$

$=(x+2)^2(x+6)(x-2)$ 答

(2) $x-y=A$ とおく。

$(x-y)^2+7y-7x+12$

$=(x-y)^2-7(x-y)+12$

$=A^2-7A+12$

$=(A-3)(A-4)$

$=(x-y-3)(x-y-4)$ 答

(3) $y-z=A$ とおく。

$3x^2+x(y-z)-2(y-z)^2$

$=3x^2+xA-2A^2$

$=(x+A)(3x-2A)$

$=(x+y-z)\{3x-2(y-z)\}$

$=(x+y-z)(3x-2y+2z)$ 答

$1 \times A \to 3A$

$3 \times -2A \to -2A$

$3 \quad -2A^2 \quad A$

6 (1) $x^2+4y^2+4xy+4x+8y+3$

$=x^2+(4y+4)x+4y^2+8y+3$

$=x^2+(4y+4)x+(2y+1)(2y+3)$

$=(x+2y+1)(x+2y+3)$ 答

$4y^2+8y+3$ の因数分解

$2 \times 1 \to 2$

$2 \times 3 \to 6$

$4 \quad 3 \quad 8$

$x^2+(4y+4)x+(2y+1)(2y+3)$ の因数分解

$1 \times 2y+1 \to 2y+1$

$1 \times 2y+3 \to 2y+3$

$1 \quad (2y+1)(2y+3) \quad 4y+4$

(2) $2x^2+3xy+y^2+5x+3y+2$

$=2x^2+(3y+5)x+y^2+3y+2$

$=2x^2+(3y+5)x+(y+1)(y+2)$

$=(2x+y+1)(x+y+2)$ 答

$2 \times y+1 \to y+1$

$1 \times y+2 \to 2y+4$

$2 \quad (y+1)(y+2) \quad 3y+5$

7 (1) $x^2+xy-yz-zx$

$=x(x+y)-z(y+x)$

$=(x+y)(x-z)$ 答

(2) $4x^2-9y^2+z^2-4xz$

$=4x^2-4xz+z^2-9y^2$

$=(2x-z)^2-(3y)^2$

$=(2x-z+3y)(2x-z-3y)$

$=(2x+3y-z)(2x-3y-z)$ 答

(3) $a^2c+b^2-b^2c-a^2$

$=a^2c-b^2c-a^2+b^2$

$=c(a^2-b^2)-(a^2-b^2)$

$=(c-1)(a^2-b^2)$

$=(c-1)(a+b)(a-b)$ 答

8 (1) $\dfrac{\sqrt{5}}{\sqrt{7}+\sqrt{5}}-\dfrac{\sqrt{7}}{\sqrt{7}-\sqrt{5}}$

$=\dfrac{\sqrt{5}(\sqrt{7}-\sqrt{5})-\sqrt{7}(\sqrt{7}+\sqrt{5})}{(\sqrt{7}+\sqrt{5})(\sqrt{7}-\sqrt{5})}$

$=\dfrac{\sqrt{35}-5-7-\sqrt{35}}{(\sqrt{7})^2-(\sqrt{5})^2}$

$=\dfrac{-12}{2}=-6$ 答

(2) $\dfrac{2-\sqrt{3}}{2+\sqrt{3}}+\dfrac{2+\sqrt{3}}{2-\sqrt{3}}=\dfrac{(2-\sqrt{3})^2+(2+\sqrt{3})^2}{(2+\sqrt{3})(2-\sqrt{3})}$

$=\dfrac{2^2-2\cdot2\cdot\sqrt{3}+(\sqrt{3})^2+2^2+2\cdot2\cdot\sqrt{3}+(\sqrt{3})^2}{2^2-(\sqrt{3})^2}$

$=\dfrac{4-4\sqrt{3}+3+4+4\sqrt{3}+3}{4-3}$

$=\dfrac{14}{1}=14$ 答

(3) $\dfrac{1}{2\sqrt{3}+\sqrt{2}}=\dfrac{1}{2\sqrt{3}+\sqrt{2}}\cdot\dfrac{2\sqrt{3}-\sqrt{2}}{2\sqrt{3}-\sqrt{2}}$

$=\dfrac{2\sqrt{3}-\sqrt{2}}{12-2}=\dfrac{2\sqrt{3}-\sqrt{2}}{10}$

$\dfrac{3}{5\sqrt{12}-\sqrt{50}}=\dfrac{3}{10\sqrt{3}-5\sqrt{2}}=\dfrac{3}{5(2\sqrt{3}-\sqrt{2})}$

$=\dfrac{3}{5(2\sqrt{3}-\sqrt{2})}\cdot\dfrac{2\sqrt{3}+\sqrt{2}}{2\sqrt{3}+\sqrt{2}}$

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

$=\dfrac{6\sqrt{3}+3\sqrt{2}}{50}$

よって,

$(\text{与式})=\dfrac{2\sqrt{3}-\sqrt{2}}{10}+\dfrac{6\sqrt{3}+3\sqrt{2}}{50}$

$=\dfrac{10\sqrt{3}-5\sqrt{2}+6\sqrt{3}+3\sqrt{2}}{50}$

$=\dfrac{16\sqrt{3}-2\sqrt{2}}{50}$

$=\dfrac{8\sqrt{3}-\sqrt{2}}{25}$ 答