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実習6.2

> $solve\left(a\cdot x^3+b\cdot x^2+c\cdot x+d=0, x\right)$

$$\frac{1}{6\,a}\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}-\left(2\left(3\,c\,a-b^2\right)\right)\Big/\left(3\,a\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}\right)-\frac{b}{3\,a},\tag{1}$$

$$-\frac{1}{12\,a}\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}+\left(3\,c\,a-b^2\right)\Big/\left(3\,a\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}\right)-\frac{b}{3\,a}+\frac{1}{2}\left(\mathrm{I}\sqrt{3}\left(\frac{1}{6\,a}\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}+\left(2\left(3\,c\,a-b^2\right)\right)\Big/\left(3\,a\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}\right)\right)\right),$$

$$-\frac{1}{12\,a}\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}+\left(3\,c\,a-b^2\right)\Big/\left(3\,a\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}\right)-\frac{b}{3\,a}-\frac{1}{2}\left(\mathrm{I}\sqrt{3}\left(\frac{1}{6\,a}\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}+\left(2\left(3\,c\,a-b^2\right)\right)\Big/\left(3\,a\left(12\sqrt{3}\,\sqrt{27\,a^2\,d^2-18\,a\,b\,c\,d+4\,a\,c^3+4\,b^3\,d-b^2\,c^2}\;a-108\,d\,a^2+36\,c\,b\,a-8\,b^3\right)^{1/3}\right)\right)\right)$$

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