# Korrekturliste zum Studienbuch „Ingenieurmathematik“

In der aktuellen Auflage wurden in einigen Büchern durch ein Konvertierungsproblem teilweise die Zeichen π durch ≠ und µ durch ∝ ersetzt. Da diese Fehler nicht in jedem Buch und auch nicht in jeder Formel auftreten, folgt hier eine Auflistung der betroffenen Stellen.

| Seite, Zeile | FALSCH | RICHTIG |
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| 137, 2 | $z=\sqrt{2}\left(\cos\frac{3}{4}\neq+\mathrm{j}\sin\frac{3}{4}\neq\right)$ | $z=\sqrt{2}\left(\cos\frac{3}{4}\pi+\mathrm{j}\sin\frac{3}{4}\pi\right)$ |
| 137, 5 | $z^{18}=2^9\left(\cos\frac{27}{2}\neq+\mathrm{j}\sin\frac{27}{2}\neq\right)$ | $z^{18}=2^9\left(\cos\frac{27}{2}\pi+\mathrm{j}\sin\frac{27}{2}\pi\right)$ |
| 138, 2 | $\frac{27}{2}\neq=12\neq+\frac{3}{2}\neq$ | $\frac{27}{2}\pi=12\pi+\frac{3}{2}\pi$ |
| 138, 3 | $z^{18}=512\left(\cos\frac{3}{2}\neq+\mathrm{j}\sin\frac{3}{2}\neq\right)=-512\mathrm{j}$ | $z^{18}=512\left(\cos\frac{3}{2}\pi+\mathrm{j}\sin\frac{3}{2}\pi\right)=-512\mathrm{j}$ |
| 141, 8 | $\frac{2\neq}{n}$ | $\frac{2\pi}{n}$ |
| 147, 20 | $z_1=12e^{\mathrm{j}\neq}, z_2=4e^{\mathrm{j}\frac{\neq}{3}}$<br>$z_1 z_2=12\cdot4\cdot e^{\mathrm{j}\left(\neq+\frac{\neq}{3}\right)}=48e^{\mathrm{j}\frac{4}{3}\neq}$<br>$\frac{z_1}{z_2}=\frac{12}{4}e^{\mathrm{j}\left(\neq-\frac{\neq}{3}\right)}=3e^{\mathrm{j}\frac{2}{3}\neq}$ | $z_1=12e^{\mathrm{j}\pi}, z_2=4e^{\mathrm{j}\frac{\pi}{3}}$<br>$z_1 z_2=12\cdot4\cdot e^{\mathrm{j}\left(\pi+\frac{\pi}{3}\right)}=48e^{\mathrm{j}\frac{4}{3}\pi}$<br>$\frac{z_1}{z_2}=\frac{12}{4}e^{\mathrm{j}\left(\pi-\frac{\pi}{3}\right)}=3e^{\mathrm{j}\frac{2}{3}\pi}$ |
| 148, 20 | $z=2e^{\mathrm{j}\frac{\neq}{2}}$ | $z=2e^{\mathrm{j}\frac{\pi}{2}}$ |
| 148, 21 | $z^3=2^3e^{\mathrm{j}3\cdot\frac{\neq}{2}}=8e^{\mathrm{j}\frac{3}{2}\neq}$ | $z^3=2^3e^{\mathrm{j}3\cdot\frac{\pi}{2}}=8e^{\mathrm{j}\frac{3}{2}\pi}$ |
| 148, 22 | $z=2e^{\mathrm{j}\left(\frac{\neq}{2}+2\neq k\right)}$ | $z=2e^{\mathrm{j}\left(\frac{\pi}{2}+2\pi k\right)}$ |
| 148, 23 | $\sqrt{z}=\sqrt{2}\,e^{\mathrm{j}\left(\frac{\neq}{4}+\neq k\right)}$ | $\sqrt{z}=\sqrt{2}\,e^{\mathrm{j}\left(\frac{\pi}{4}+\pi k\right)}$ |
| 149, 2 | $z_1=\sqrt{2}\,e^{\mathrm{j}\frac{\neq}{4}}$ | $z_1=\sqrt{2}\,e^{\mathrm{j}\frac{\pi}{4}}$ |
| 149, 4 | $z_2=\sqrt{2}\,e^{\mathrm{j}\left(\frac{\neq}{4}+\neq\right)}=\sqrt{2}\,e^{\mathrm{j}\frac{5}{4}\neq}$ | $z_2=\sqrt{2}\,e^{\mathrm{j}\left(\frac{\pi}{4}+\pi\right)}=\sqrt{2}\,e^{\mathrm{j}\frac{5}{4}\pi}$ |
| 149, 10 | $-1=1\cdot e^{\mathrm{j}(\neq+2\neq k)}$<br>$\sqrt[8]{-1}=\sqrt[8]{1}\,e^{\mathrm{j}\left(\frac{\neq+2\neq k}{8}\right)}$ | $-1=1\cdot e^{\mathrm{j}(\pi+2\pi k)}$<br>$\sqrt[8]{-1}=\sqrt[8]{1}\,e^{\mathrm{j}\left(\frac{\pi+2\pi k}{8}\right)}$ |

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| 149, 13 | $z_1 = e^{\mathrm{j}\frac{\neq}{8}}$ | $z_1 = e^{\mathrm{j}\frac{\pi}{8}}$ |
| 149, 15 | $k=1:\quad z_2 = e^{\mathrm{j}\frac{3}{8}\neq}$ $\quad k=2:\quad z_3 = e^{\mathrm{j}\frac{5}{8}\neq}$<br>$k=3:\quad z_4 = e^{\mathrm{j}\frac{7}{8}\neq}$ $\quad k=4:\quad z_5 = e^{\mathrm{j}\frac{9}{8}\neq}$<br>$k=5:\quad z_6 = e^{\mathrm{j}\frac{11}{8}\neq}$ $\quad k=6:\quad z_7 = e^{\mathrm{j}\frac{13}{8}\neq}$<br>$k=7:\quad z_8 = e^{\mathrm{j}\frac{15}{8}\neq}$ | $k=1:\quad z_2 = e^{\mathrm{j}\frac{3}{8}\pi}$ $\quad k=2:\quad z_3 = e^{\mathrm{j}\frac{5}{8}\pi}$<br>$k=3:\quad z_4 = e^{\mathrm{j}\frac{7}{8}\pi}$ $\quad k=4:\quad z_5 = e^{\mathrm{j}\frac{9}{8}\pi}$<br>$k=5:\quad z_6 = e^{\mathrm{j}\frac{11}{8}\pi}$ $\quad k=6:\quad z_7 = e^{\mathrm{j}\frac{13}{8}\pi}$<br>$k=7:\quad z_8 = e^{\mathrm{j}\frac{15}{8}\pi}$ |
| 152, 3 | $\ln\left(2-2\sqrt{3}\,\mathrm{j}\right) = \ln 4 + \mathrm{j}\left(\frac{5}{3}\neq + 2\neq k\right)$ | $\ln\left(2-2\sqrt{3}\,\mathrm{j}\right) = \ln 4 + \mathrm{j}\left(\frac{5}{3}\pi + 2\pi k\right)$ |
| 152, 5 | $k=0:\quad \ln 4 + \mathrm{j}\frac{5}{3}\neq$ | $k=0:\quad \ln 4 + \mathrm{j}\frac{5}{3}\pi$ |
| 152, 7 | $k=-1:\quad \ln 4 - \mathrm{j}\frac{\neq}{3}$ | $k=-1:\quad \ln 4 - \mathrm{j}\frac{\pi}{3}$ |
| 152, 7 | $k=1:\quad \ln 4 + \mathrm{j}\frac{11}{3}\neq$ | $k=1:\quad \ln 4 + \mathrm{j}\frac{11}{3}\pi$ |
| 152, 7 | $k=2:\quad \ln 4 + \mathrm{j}\frac{17}{3}\neq$ | $k=2:\quad \ln 4 + \mathrm{j}\frac{17}{3}\pi$ |
| 152, 8 | k=0: $\mathrm{j}\frac{\neq}{2}$ | k=0: $\mathrm{j}\frac{\pi}{2}$ |
| 152, 11 | $k=-1:\quad -\mathrm{j}\frac{3}{2}\neq$ | $k=-1:\quad -\mathrm{j}\frac{3}{2}\pi$ |
| 152, 11 | $k=2:\quad \mathrm{j}\frac{9}{2}\neq$ | $k=2:\quad \mathrm{j}\frac{9}{2}\pi$ |
| 152, 11 | $\ln 3 + \mathrm{j}\frac{3}{2}\neq$ | $\ln 3 + \mathrm{j}\frac{3}{2}\pi$ |
| 152, 13 | $k=-1:\quad \ln 3 - \mathrm{j}\frac{\neq}{2}$ | $k=-1:\quad \ln 3 - \mathrm{j}\frac{\pi}{2}$ |
| 152, 13 | $k=1:\quad \ln 3 + \mathrm{j}\frac{7}{2}\neq$ | $k=1:\quad \ln 3 + \mathrm{j}\frac{7}{2}\pi$ |
| 152, 13 | $k=2:\quad \ln 3 + \mathrm{j}\frac{11}{2}\neq$ | $k=2:\quad \ln 3 + \mathrm{j}\frac{11}{2}\pi$ |
| 154, 20 | $\sqrt[\mathrm{j}]{\mathrm{j}} = e^{\frac{\neq}{2}}\, e^{\mathrm{j}(-1)\ln 1} = e^{\frac{\neq}{2}} \approx 4{,}8$ | $\sqrt[\mathrm{j}]{\mathrm{j}} = e^{\frac{\pi}{2}}\, e^{\mathrm{j}(-1)\ln 1} = e^{\frac{\pi}{2}} \approx 4{,}8$ |

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| 158, 5 | $z(t)=\frac{1}{2}t\,e^{\mathrm{j}\frac{\neq}{4}}$ | $z(t)=\frac{1}{2}t\,e^{\mathrm{j}\frac{\pi}{4}}$ |
| 158, 9 | $\frac{\neq}{4}$ | $\frac{\pi}{4}$ |
| 158, 13 | $\frac{5}{4}\neq$ | $\frac{5}{4}\pi$ |
| 159, 2 | $z(t)=\frac{1}{2}t\,e^{\mathrm{j}\frac{\neq}{4}}$ | $z(t)=\frac{1}{2}t\,e^{\mathrm{j}\frac{\pi}{4}}$ |
| 159, 3 | $\frac{\neq}{4}$ | $\frac{\pi}{4}$ |
| 160, 2 | $z(t) = \frac{1}{4}t^3 e^{\mathrm{j}\frac{\neq}{6}}$ | $z(t) = \frac{1}{4}t^3 e^{\mathrm{j}\frac{\pi}{6}}$ |
| 160, 4 | $z(t) = \frac{1}{4}t^3 e^{\mathrm{j}\frac{\neq}{6}}$ | $z(t) = \frac{1}{4}t^3 e^{\mathrm{j}\frac{\pi}{6}}$ |
| 160, 7 | $z^*(t) = \frac{1}{4}t^3 e^{-\mathrm{j}\frac{\neq}{6}}$ | $z^*(t) = \frac{1}{4}t^3 e^{-\mathrm{j}\frac{\pi}{6}}$ |
| 161, 2 | $\frac{1}{z(t)} = \frac{4}{t^3 e^{\mathrm{j}\frac{\neq}{6}}} = \frac{4}{t^3} e^{-\mathrm{j}\frac{\neq}{6}}$ | $\frac{1}{z(t)} = \frac{4}{t^3 e^{\mathrm{j}\frac{\pi}{6}}} = \frac{4}{t^3} e^{-\mathrm{j}\frac{\pi}{6}}$ |
| 164, Grafik | $\frac{3}{4}\neq$ | $\frac{3}{4}\pi$ |
| 164, Grafik | $\frac{\neq}{2}$ | $\frac{\pi}{2}$ |
| 164, Grafik | $\frac{4}{5}\neq$ | $\frac{4}{5}\pi$ |
| 164, Grafik | $\frac{3}{2}\neq$ | $\frac{3}{2}\pi$ |
| 164, Grafik | $\frac{7}{4}\neq$ | $\frac{7}{4}\pi$ |
| 165, Grafik | $\frac{3}{2}\neq$ | $\frac{3}{2}\pi$ |
| 165, Grafik | $\frac{3}{2}\neq$ | $\frac{3}{2}\pi$ |

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| 166, 1 | $\frac{1}{z(t)} = \frac{1}{2e^{j\left(t+\frac{\neq}{4}\right)}} = \frac{1}{2}e^{-j\left(t+\frac{\neq}{4}\right)}$ | $\frac{1}{z(t)} = \frac{1}{2e^{j\left(t+\frac{\pi}{4}\right)}} = \frac{1}{2}e^{-j\left(t+\frac{\pi}{4}\right)}$ |
| 167, Grafik | $\frac{3}{2}\neq$ | $\frac{3}{2}\pi$ |
| 177, 19 | $e^{j\frac{\neq}{6}}$ | $e^{j\frac{\pi}{6}}$ |
| 178, 10 | $\left(1+\cos\frac{\neq}{4}+\mathrm{j}\sin\neq\frac{\neq}{4}\right)^4$ | $\left(1+\cos\frac{\pi}{4}+\mathrm{j}\sin\pi\frac{\pi}{4}\right)^4$ |
| 285, 16 | $\sum_{k=1}^{n}\propto a_k = \propto\cdot\sum_{k=1}^{n}a_k$ | $\sum_{k=1}^{n}\mu a_k = \mu\cdot\sum_{k=1}^{n}a_k$ |
| 285, 17 | $\sum_{k=1}^{n}\propto = n\propto$ | $\sum_{k=1}^{n}\mu = n\mu$ |
| 350, 20 | $y=f(t)=3\sin\left(2t+\frac{\neq}{3}\right)$ | $y=f(t)=3\sin\left(2t+\frac{\pi}{3}\right)$ |
| 350, 23 | $A_c=3\sin\left(\frac{\neq}{3}\right)=\frac{3\sqrt{3}}{2}$ , $A_s=3\cos\left(\frac{\neq}{3}\right)=\frac{3}{2}$ | $A_c=3\sin\left(\frac{\pi}{3}\right)=\frac{3\sqrt{3}}{2}$ , $A_s=3\cos\left(\frac{\pi}{3}\right)=\frac{3}{2}$ |
| 352, 10 | $A=\sqrt{380^2+200^2+2\cdot380\cdot200\cos\left(\frac{\neq}{8}+\frac{\neq}{6}\right)}\mathrm{V}=526{,}2\,\mathrm{V}$ | $A=\sqrt{380^2+200^2+2\cdot380\cdot200\cos\left(\frac{\pi}{8}+\frac{\pi}{6}\right)}\mathrm{V}=526{,}2\,\mathrm{V}$ |
| 353, 17 | $f(x)=\sin x$ mit $-\frac{\neq}{2}\le x\le\frac{\neq}{2}$ | $f(x)=\sin x$ mit $-\frac{\pi}{2}\le x\le\frac{\pi}{2}$ |
| 353, 18 | $f(x)=\cos x$ mit $0\le x\le\neq$ | $f(x)=\cos x$ mit $0\le x\le\pi$ |
| 353, 19 | $f(x)=\tan x$ mit $-\frac{\neq}{2}<x<\frac{\neq}{2}$ | $f(x)=\tan x$ mit $-\frac{\pi}{2}<x<\frac{\pi}{2}$ |
| 355, 5 | $-\frac{\neq}{2}\le y\le\frac{\neq}{2}$ | $-\frac{\pi}{2}\le y\le\frac{\pi}{2}$ |
| 355, 5 | $0\le y\le\neq$ | $0\le y\le\pi$ |
| 355, 5 | $-\frac{\neq}{2}<y<\frac{\neq}{2}$ | $-\frac{\pi}{2}<y<\frac{\pi}{2}$ |
| 355, 9 | $y=\pm\frac{\neq}{2}$ | $y=\pm\frac{\pi}{2}$ |

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| 356, 3 | $\arccos(0,5)=1,046=\frac{\neq}{3}$ | $\arccos(0,5)=1,046=\frac{\pi}{3}$ |
| 408, 12 | $z=e^{j\frac{\neq}{6}}$<br>$z=\cos\frac{\neq}{6}+j\sin\frac{\neq}{6}$<br>$z=\frac{\sqrt{3}}{2}+\frac{1}{2}j$ | $z=e^{j\frac{\pi}{6}}$<br>$z=\cos\frac{\pi}{6}+j\sin\frac{\pi}{6}$<br>$z=\frac{\sqrt{3}}{2}+\frac{1}{2}j$ |
| 455, 1 | $\mathbf{A}=\begin{pmatrix}2&1&2\\0&3&4\\0&2&5\end{pmatrix}$<br>$D=\det(\mathbf{A}-\propto\mathbf{E})=\begin{vmatrix}2-\propto&1&2\\0&3-\propto&4\\0&2&5-\propto\end{vmatrix}=0$<br>$0=\begin{vmatrix}2-\propto&1&2\\0&3-\propto&4\\0&2&5-\propto\end{vmatrix}\begin{matrix}2-\propto&1\\0&3-\propto\\0&2\end{matrix}$<br>$(2-\propto)(3-\propto)(5-\propto)-2\cdot4\cdot(2-\propto)=0$<br>$(2-\propto)(15-8\propto+\propto^2)=0$<br>$2-\propto=0 \quad\Rightarrow\quad \propto_1=2$<br>$\propto^2-8\propto+15=0 \quad\Rightarrow\quad \propto_2=1 \quad \propto_3=7$<br>$\propto_1=2 \quad\Rightarrow\quad \begin{pmatrix}0&1&2\\0&1&4\\0&2&3\end{pmatrix}\cdot\begin{pmatrix}x_1\\x_2\\x_3\end{pmatrix}=\begin{pmatrix}0\\0\\0\end{pmatrix}$ | $\mathbf{A}=\begin{pmatrix}2&1&2\\0&3&4\\0&2&5\end{pmatrix}$<br>$D=\det(\mathbf{A}-\mu\mathbf{E})=\begin{vmatrix}2-\mu&1&2\\0&3-\mu&4\\0&2&5-\mu\end{vmatrix}=0$<br>$0=\begin{vmatrix}2-\mu&1&2\\0&3-\mu&4\\0&2&5-\mu\end{vmatrix}\begin{matrix}2-\mu&1\\0&3-\mu\\0&2\end{matrix}$<br>$(2-\mu)(3-\mu)(5-\mu)-2\cdot4\cdot(2-\mu)=0$<br>$(2-\mu)(15-8\mu+\mu^2)=0$<br>$2-\mu=0 \quad\Rightarrow\quad \mu_1=2$<br>$\mu^2-8\mu+15=0 \quad\Rightarrow\quad \mu_2=1 \quad \mu_3=7$<br>$\mu_1=2 \quad\Rightarrow\quad \begin{pmatrix}0&1&2\\0&1&4\\0&2&3\end{pmatrix}\cdot\begin{pmatrix}x_1\\x_2\\x_3\end{pmatrix}=\begin{pmatrix}0\\0\\0\end{pmatrix}$ |
| 455, 27 | $\propto_2=1$ | $\mu_2=1$ |
| 456, 2 | $\propto_3=7$ | $\mu_3=7$ |
| 456, 15 | $\propto_1+\propto_2+\propto_3=2+1+7=10$<br>$\det\mathbf{A}=\begin{vmatrix}2&1&2\\0&3&4\\0&2&5\end{vmatrix}\begin{matrix}2&1\\0&3\\0&2\end{matrix}=30-16=14$<br>$\propto_1\cdot\propto_2\cdot\propto_3=2\cdot1\cdot7=14$ | $\mu_1+\mu_2+\mu_3=2+1+7=10$<br>$\det\mathbf{A}=\begin{vmatrix}2&1&2\\0&3&4\\0&2&5\end{vmatrix}\begin{matrix}2&1\\0&3\\0&2\end{matrix}=30-16=14$<br>$\mu_1\cdot\mu_2\cdot\mu_3=2\cdot1\cdot7=14$ |

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| 456, 22 | $D=\det(\mathbf{A}-\propto\mathbf{E})=\begin{vmatrix}1-\propto & \sqrt{3} & 0\\ \sqrt{3} & -1-\propto & 0\\ 0 & 0 & 3-\propto\end{vmatrix}=0$<br>$0=\begin{vmatrix}1-\propto & \sqrt{3} & 0\\ \sqrt{3} & -1-\propto & 0\\ 0 & 0 & 3-\propto\end{vmatrix}\begin{matrix}1-\propto & \sqrt{3}\\ \sqrt{3} & -1-\propto\\ 0 & 0\end{matrix}$<br>$(1-\propto)(-1-\propto)(3-\propto)-3(3-\propto)=0$<br>$(3-\propto)(\propto^2-4)=0$<br>$\propto_1=3 \qquad \propto_2=2 \qquad \propto_3=-2$ | $D=\det(\mathbf{A}-\mu\mathbf{E})=\begin{vmatrix}1-\mu & \sqrt{3} & 0\\ \sqrt{3} & -1-\mu & 0\\ 0 & 0 & 3-\mu\end{vmatrix}=0$<br>$0=\begin{vmatrix}1-\mu & \sqrt{3} & 0\\ \sqrt{3} & -1-\mu & 0\\ 0 & 0 & 3-\mu\end{vmatrix}\begin{matrix}1-\mu & \sqrt{3}\\ \sqrt{3} & -1-\mu\\ 0 & 0\end{matrix}$<br>$(1-\mu)(-1-\mu)(3-\mu)-3(3-\mu)=0$<br>$(3-\mu)(\mu^2-4)=0$<br>$\mu_1=3 \qquad \mu_2=2 \qquad \mu_3=-2$ |
| 457, 2 | $\propto_1=3$ | $\mu_1=3$ |
| 457, 13 | $\propto_2=2$ | $\mu_2=2$ |
| 458, 2 | $\propto_3=-2$ | $\mu_3=-2$ |
| 458, 13 | $\propto_1+\propto_2+\propto_3=3+2-2=3$<br>$\det\mathbf{A}=\begin{vmatrix}1 & \sqrt{3} & 0\\ \sqrt{3} & -1 & 0\\ 0 & 0 & 3\end{vmatrix}\begin{matrix}1 & \sqrt{3}\\ \sqrt{3} & -1\\ 0 & 0\end{matrix}=-3-9=-12$<br>$\propto_1\cdot\propto_2\cdot\propto_3=3\cdot 2\cdot(-2)=-12$ | $\mu_1+\mu_2+\mu_3=3+2-2=3$<br>$\det\mathbf{A}=\begin{vmatrix}1 & \sqrt{3} & 0\\ \sqrt{3} & -1 & 0\\ 0 & 0 & 3\end{vmatrix}\begin{matrix}1 & \sqrt{3}\\ \sqrt{3} & -1\\ 0 & 0\end{matrix}=-3-9=-12$<br>$\mu_1\cdot\mu_2\cdot\mu_3=3\cdot 2\cdot(-2)=-12$ |
| 462, 2 | $\{a_n\}=\left\{\cos\left(n\frac{\neq}{2}\right)\right\}$ | $\{a_n\}=\left\{\cos\left(n\frac{\pi}{2}\right)\right\}$ |
| 483, 10 | $\sqrt{6}\,e^{\mathrm{j}\frac{\neq}{4}}$ | $\sqrt{6}\,e^{\mathrm{j}\frac{\pi}{4}}$ |
| 484, 8 | $\ln 2+\frac{\neq}{4}\mathrm{j}$ | $\ln 2+\frac{\pi}{4}\mathrm{j}$ |
| 484, 9 | $\ln\neq+\frac{\neq}{2}$ | $\ln\pi+\frac{\pi}{2}$ |
| 484, 9 | $\frac{3}{2}\ln 2-\frac{\neq}{4}\mathrm{j}$ | $\frac{3}{2}\ln 2-\frac{\pi}{4}\mathrm{j}$ |
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