**Geradengleichung**

**Bestimmungsstücke:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Richtungsvektor$\overline{v}\left(v\_{1;} v\_{2}\right)$ | $$z.B:$$$P\left(-1;-2\right); Q(3;4)$ |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Zusammenhang:$$m=tg α=\frac{v\_{2}}{v\_{1}}$$ |
| Normalenvektor$\overline{n}\left(A;B\right)$ |  |
| Steigung/Anstieg/ Richtungsfaktor*m* |  |
| Richtungswinkel$$α$$ |  |

*Bemerkung:* Parallele Geraden *m*1=*m*2 Senkrechte Geraden: *m*1=$\frac{1}{m\_{2}}$

**Geradengleichung:**

$\left.\begin{array}{c}\overline{n}\left(A;B\right)\\P\_{0}(x\_{0}; y\_{0}\end{array}\right\}$$Ax+By=Ax\_{0}+By\_{0}$

*Bemerkung:* weitere Geradengleichungen 🡪 Formelsammlung! z. B: $y=mx+b$

* Gleichung der Geraden AB? $A\left(-3;-5\right); B\left(4;1\right)$
* Liegt der Punkt *P*(2; -1) auf der Geraden?
* Bestimme die fehlende Koordinate! $ S\left(x;3\right) ϵ g$
* Schnittpunkte mit den Achsen?
* x-Achse: y=0
* y-Achse: x=0

**Anwendungen:**

* Schnittpunkt zweier Geraden
* Abstand eines Punktes von einer Geraden: *e*: *Ax*+*By*+*C*=0; *P*(*x*1 ; *y*1), dann $d=\frac{\left|Ax\_{1}+By\_{1}+C\right|}{\sqrt{A^{2}+B^{2}}}$
* e: 2x+3y=28
P(4; -2)
* Berechnungen im Dreieck:
* Höhe zur AB
* Mittelsenkrechte von AB
* Seitenhalbierende aus C
* Seitengerade AB