Mathe Nachhilfe

Analytische Geometrie - Einführung

Analytische Geometrie - Einführung

Ein neues Koordinatensystem
- Punkte ablesen
- Punkte eintragen

Vektoren
- Ortsvektoren
- Vektoren durch zwei Punkte

Länge eines Vektors
- 2D
- 3D

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  - 2D
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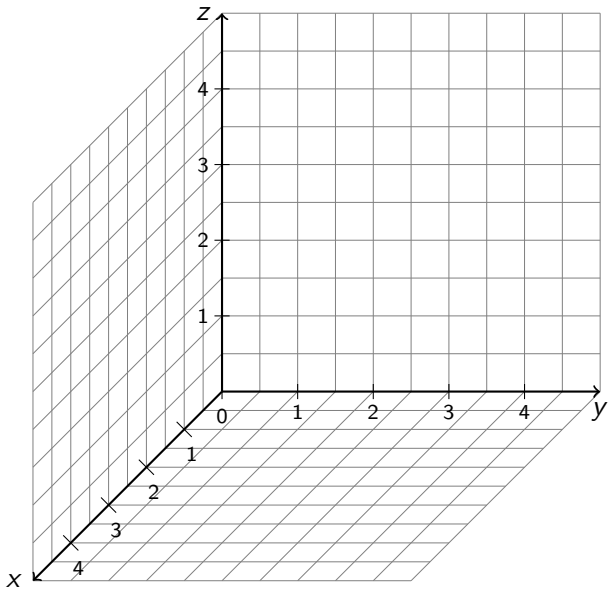
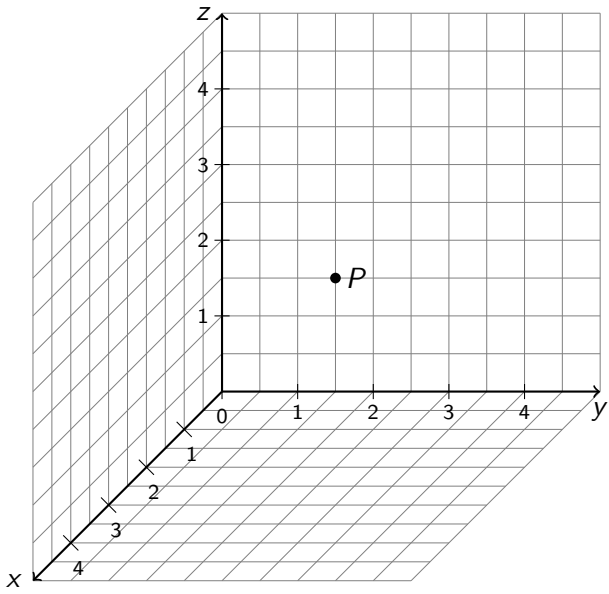
Ein neues Koordinatensystem - Punkte ablesen



Ein neues Koordinatensystem - Punkte ablesen



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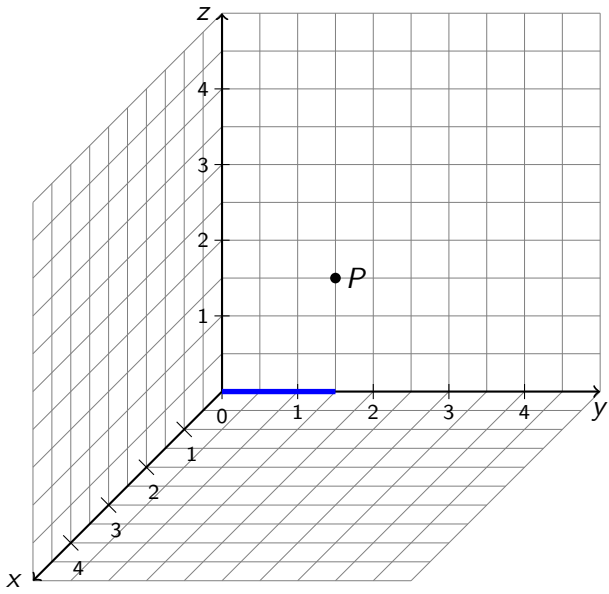
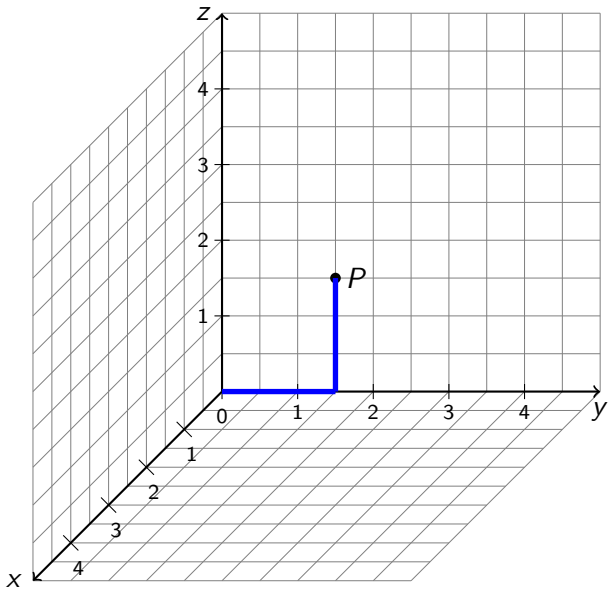
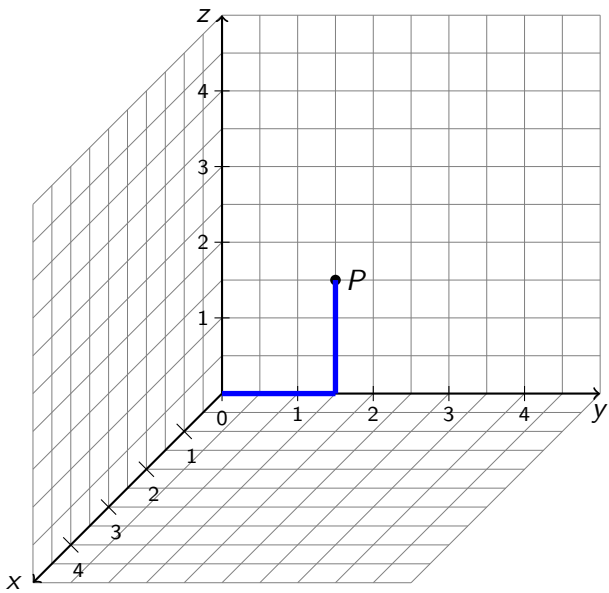


Ein neues Koordinatensystem - Punkte ablesen

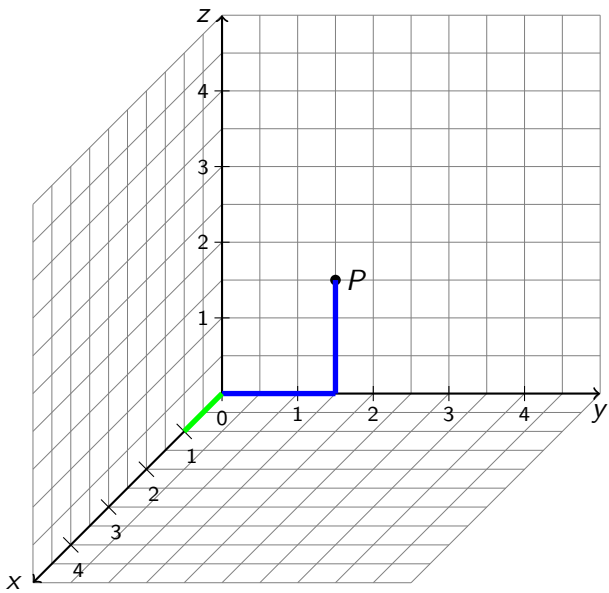


Ein neues Koordinatensystem - Punkte ablesen



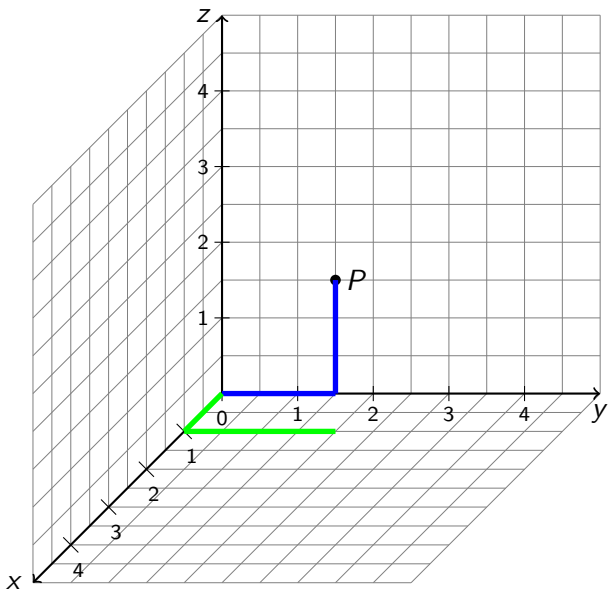
$P(0, 1.5, 1.5)$

Ein neues Koordinatensystem - Punkte ablesen



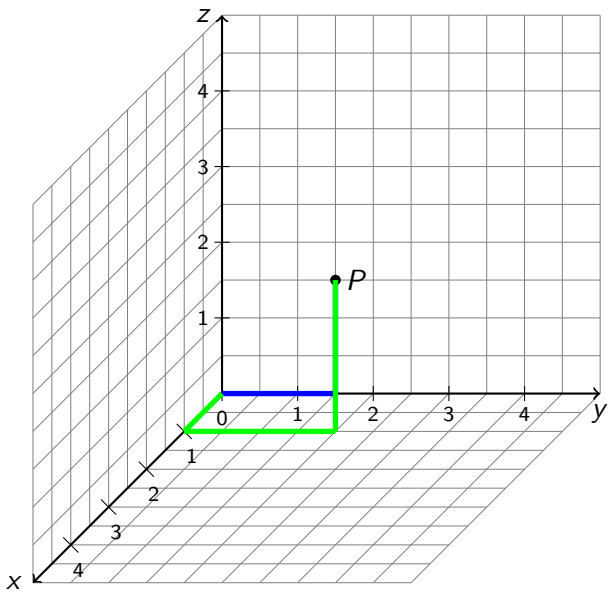
$P(0, 1.5, 1.5)$

Ein neues Koordinatensystem - Punkte ablesen



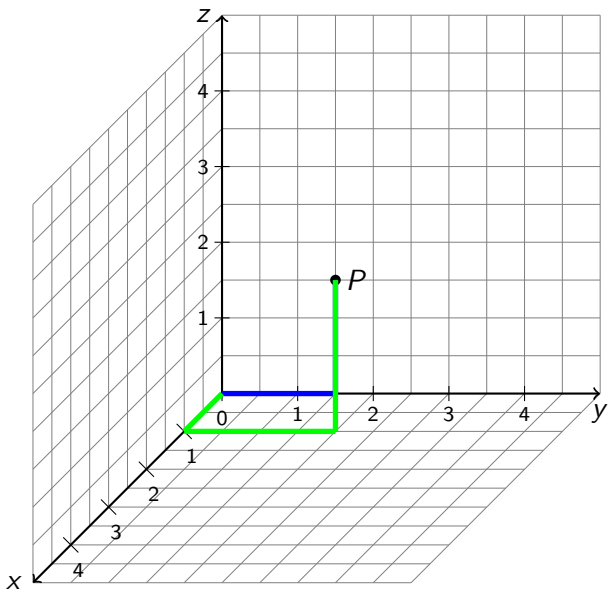
$P(0, 1.5, 1.5)$

Ein neues Koordinatensystem - Punkte ablesen



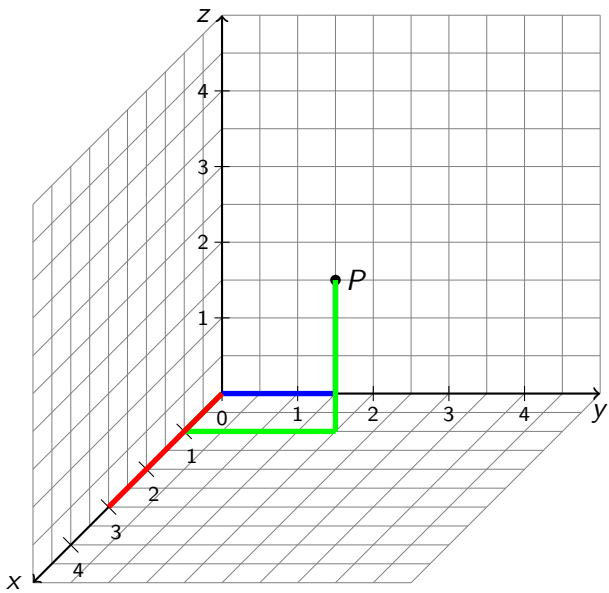
$P(0, 1.5, 1.5)$

Ein neues Koordinatensystem - Punkte ablesen



$P(0, 1.5, 1.5)$
$P(1, 2, 2)$

Ein neues Koordinatensystem - Punkte ablesen



$P(0, 1.5, 1.5)$
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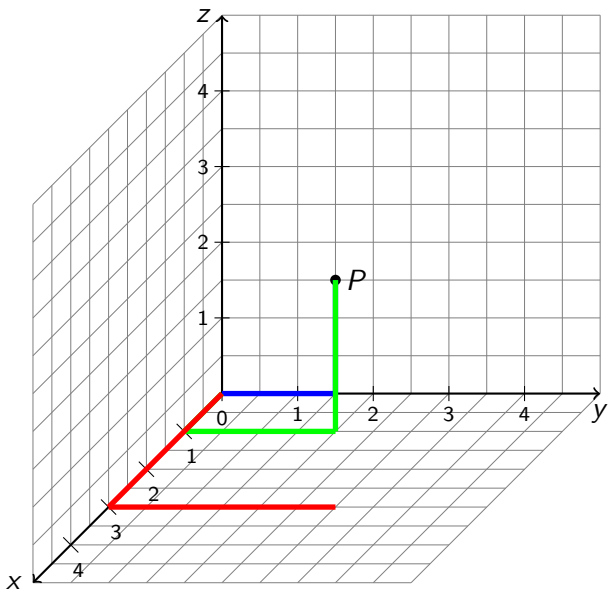
Ein neues Koordinatensystem - Punkte ablesen



$P(0, 1.5, 1.5)$
$P(1, 2, 2)$

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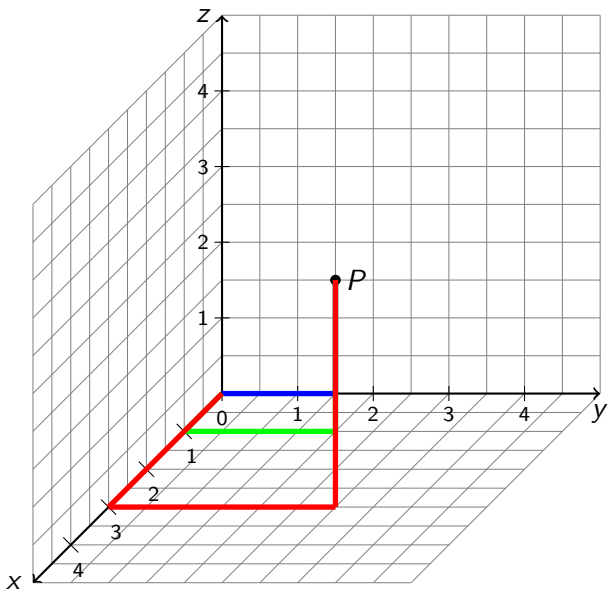

$P(0, 1.5, 1.5)$
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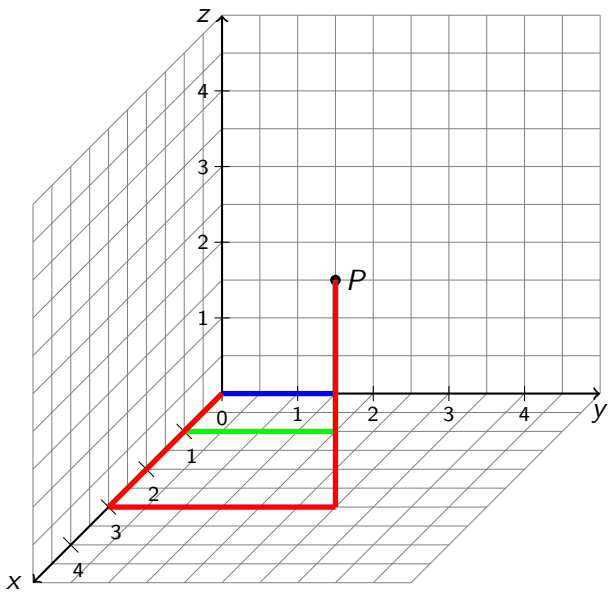
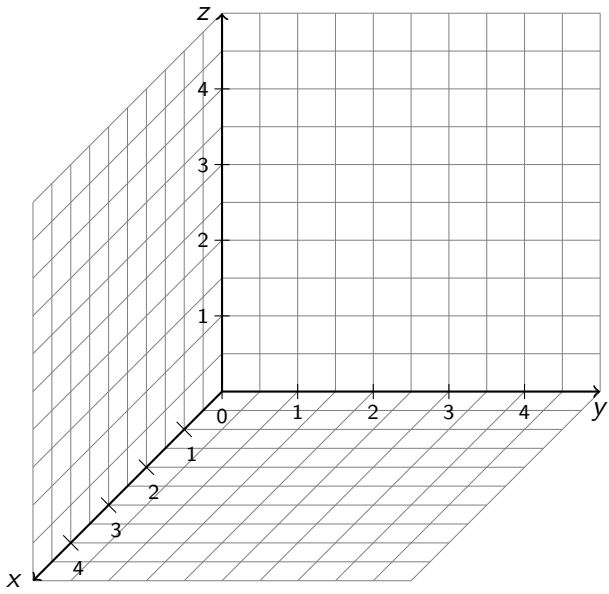


$P(0, 1.5, 1.5)$
$P(1, 2, 2)$
$P(3, 3, 3)$

Ein neues Koordinatensystem - Punkte eintragen



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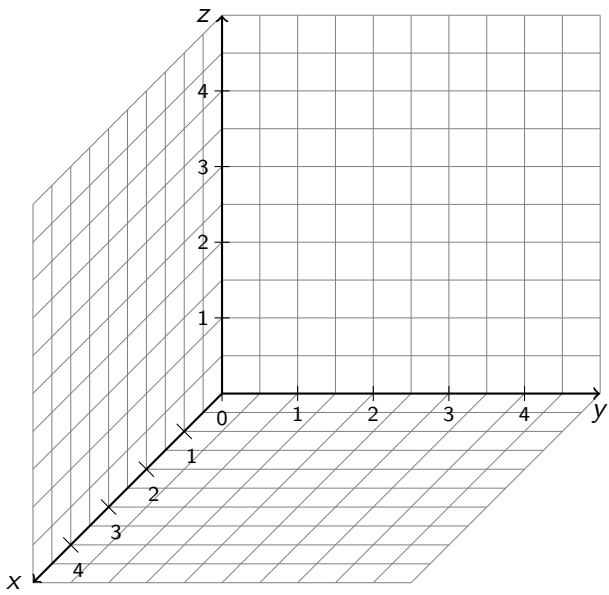
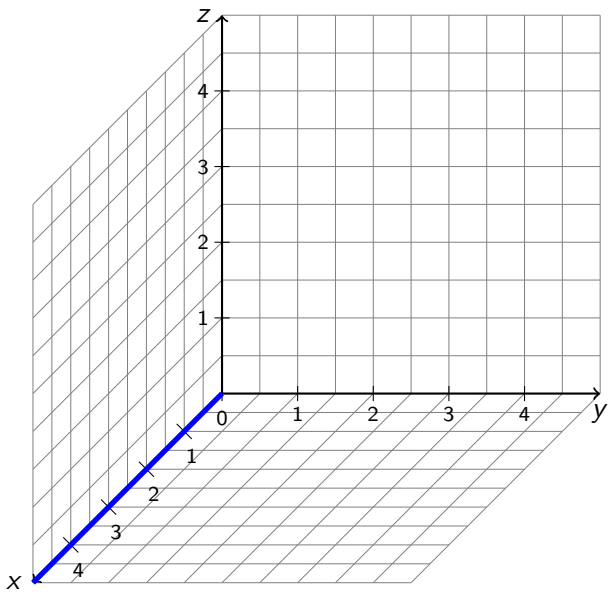


$P(5, 3, 6)$
$Q(4, 2, 1)$
$R(3, 5, 1)$

Ein neues Koordinatensystem - Punkte eintragen



$P(5, 3, 6)$
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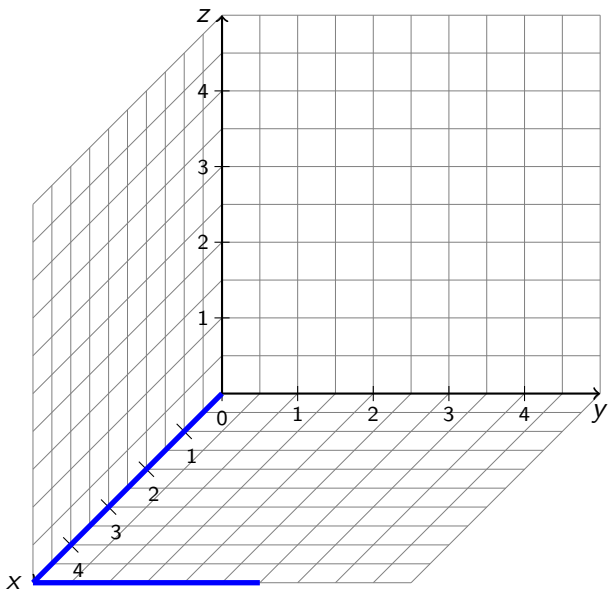

$P(5, 3, 6)$
$Q(4, 2, 1)$
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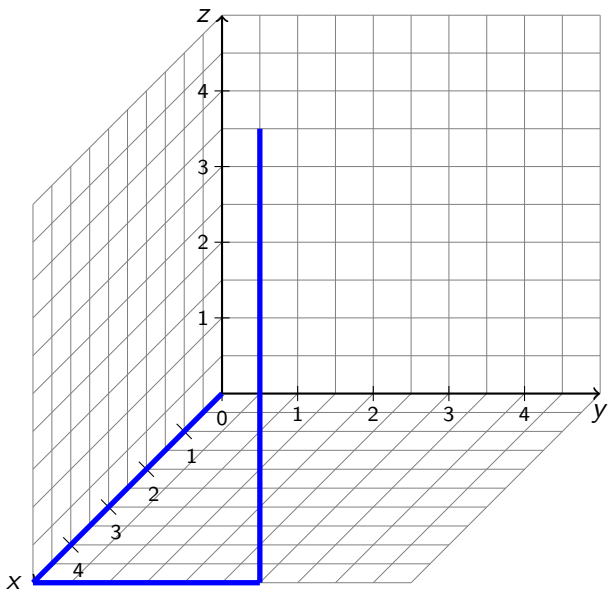
Ein neues Koordinatensystem - Punkte eintragen



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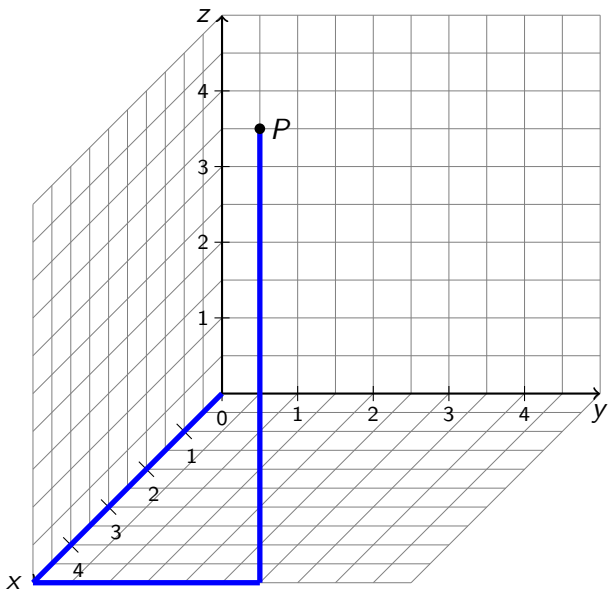

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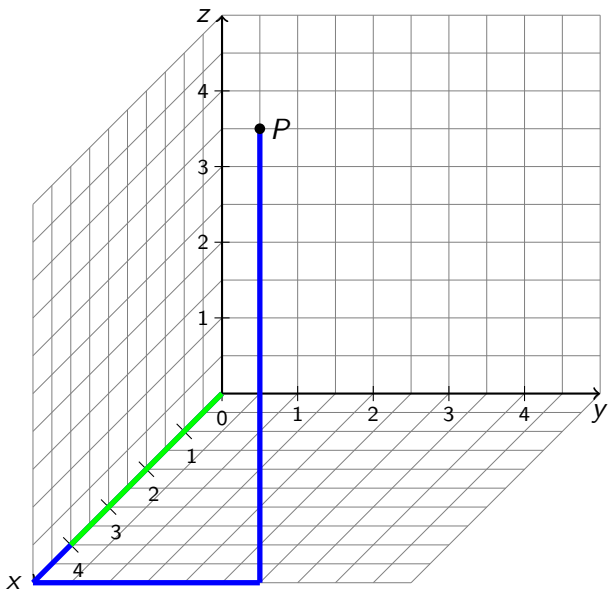

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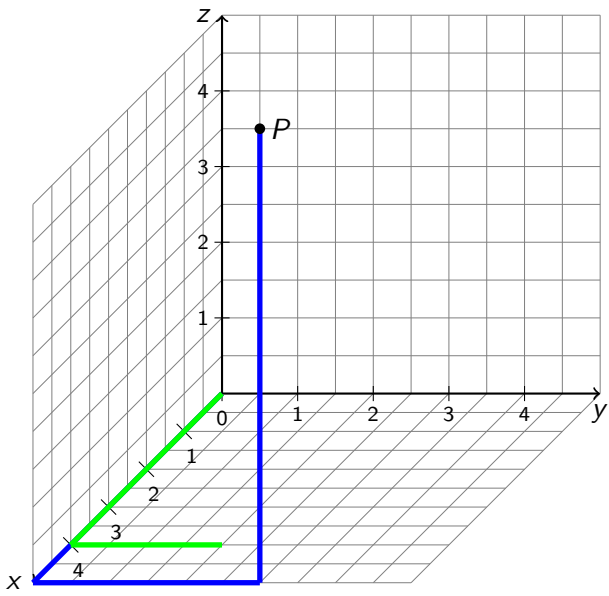

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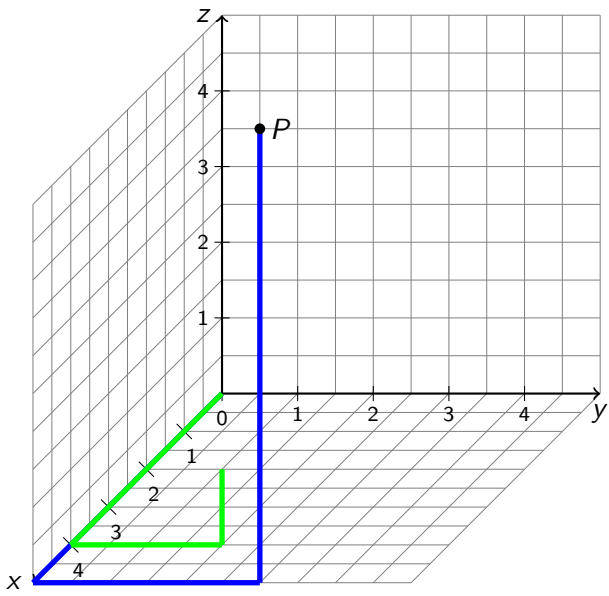

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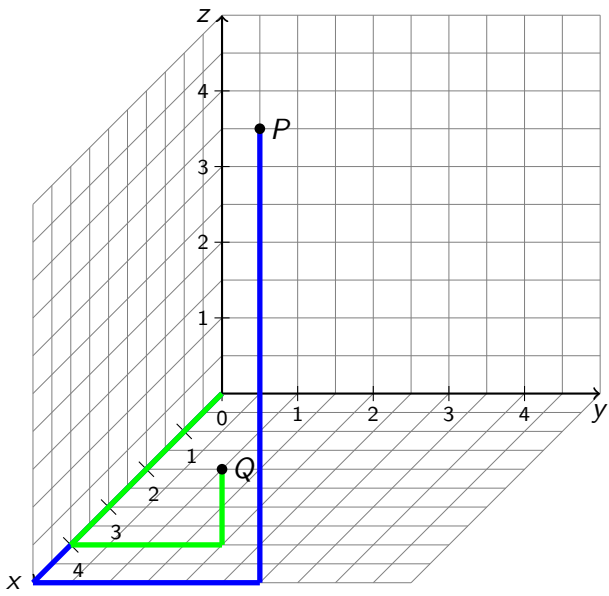

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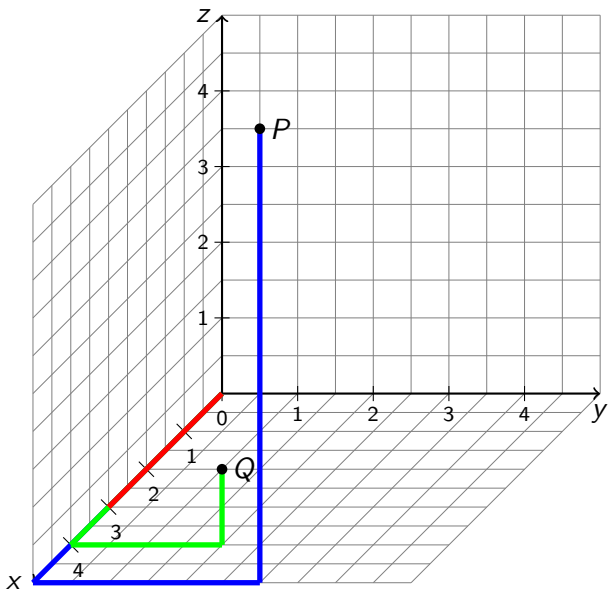

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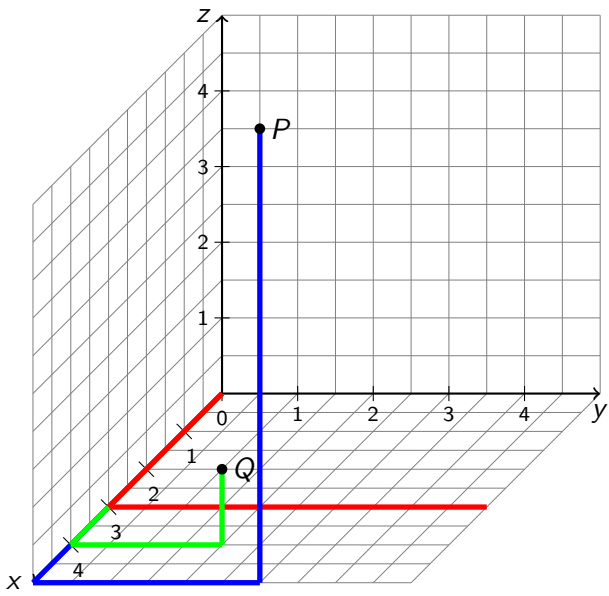

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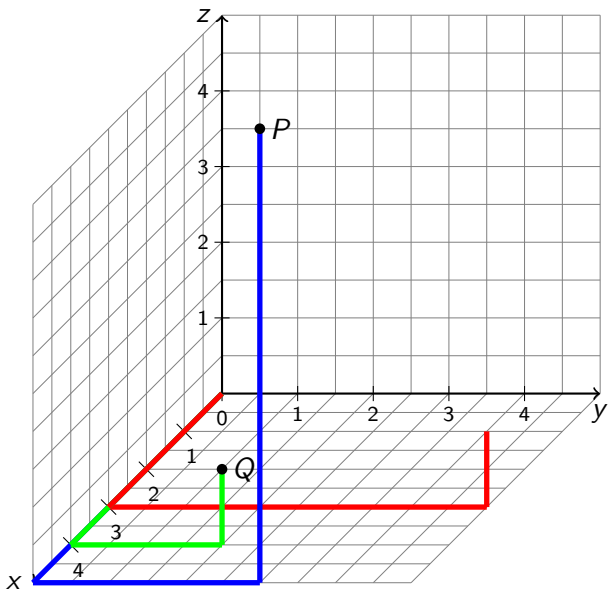

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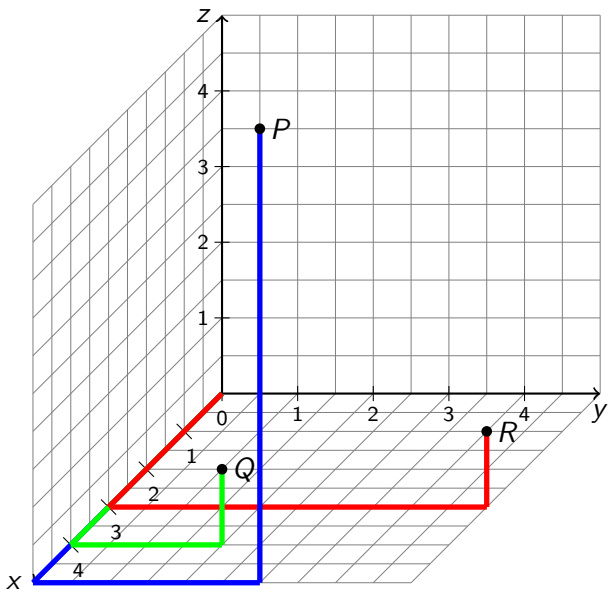

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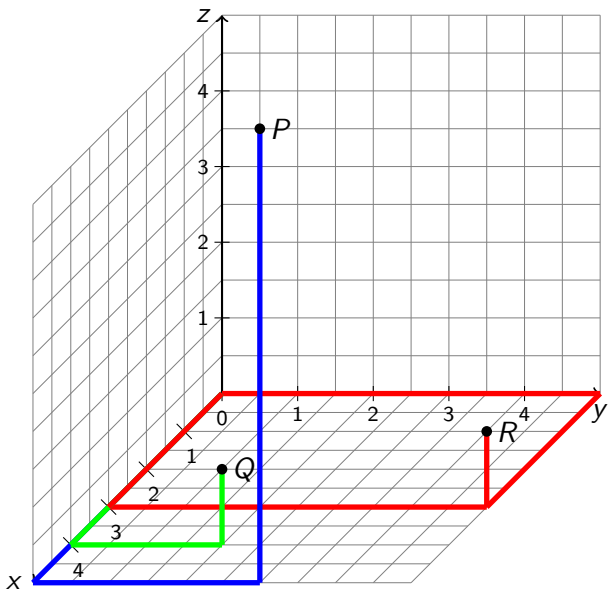
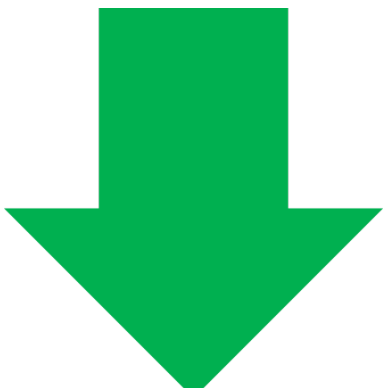


$P(5, 3, 6)$
$Q(4, 2, 1)$
$R(3, 5, 1)$

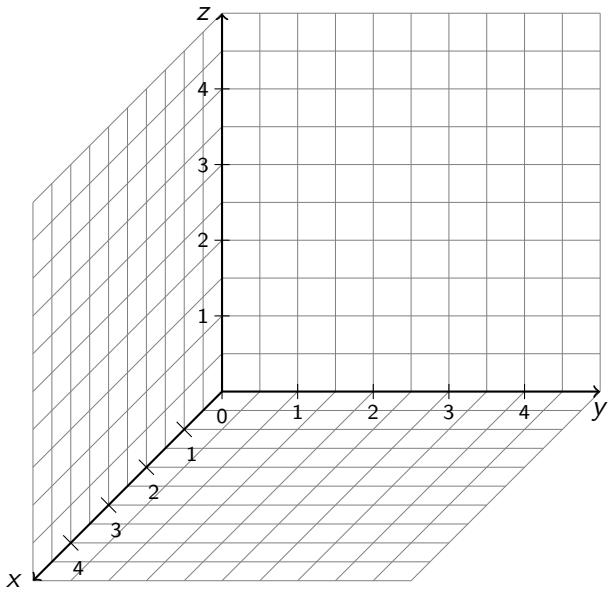
facebook.com/JeanHilftDir
Skype: JeanHilftDir



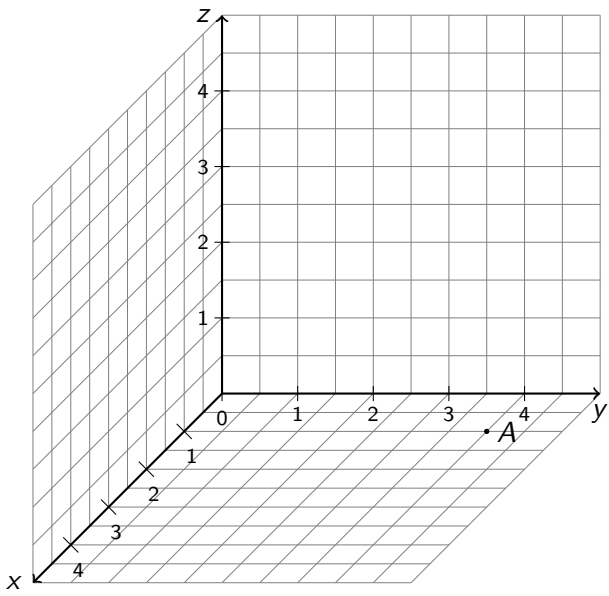
Folien: github.com/JeanHilftDir/Mathe

Analytische Geometrie - Einführung

Vektoren - Ortsvektoren

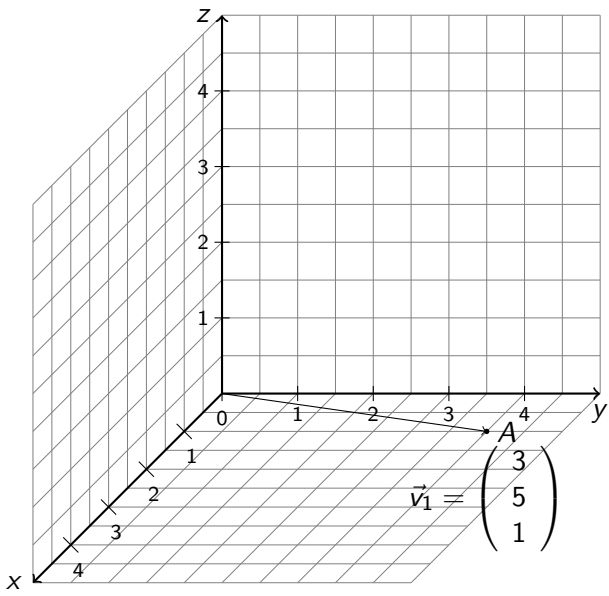


Vektoren - Ortsvektoren



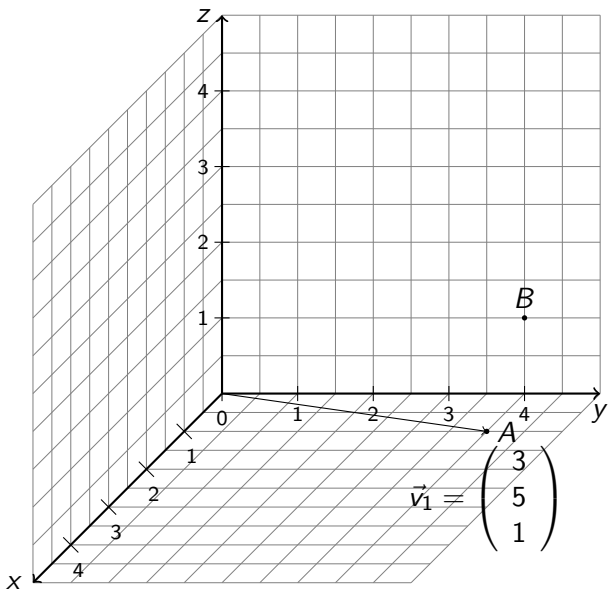
$A = (3, 5, 1)$

Vektoren - Ortsvektoren



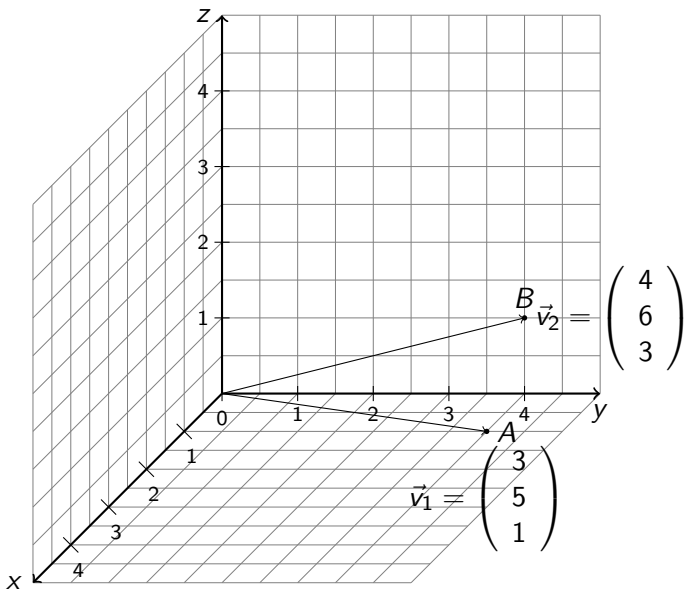
$A = (3, 5, 1)$

Vektoren - Ortsvektoren



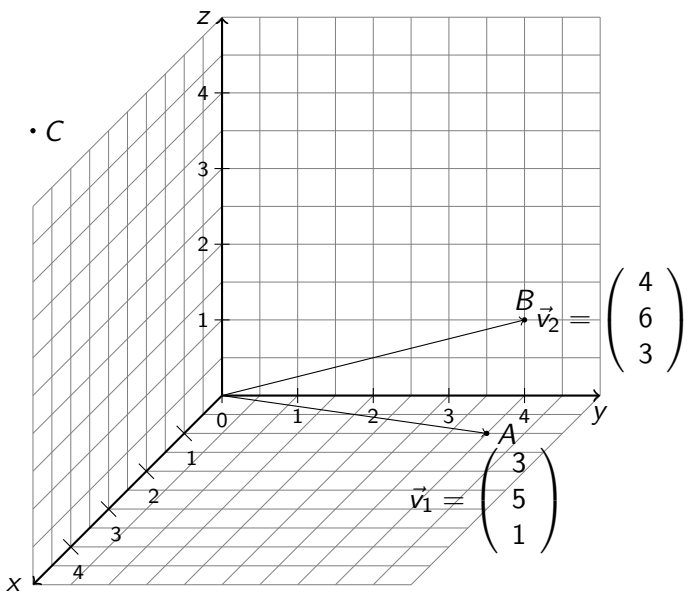
$A = (3, 5, 1)$
$B = (4, 6, 3)$

Vektoren - Ortsvektoren



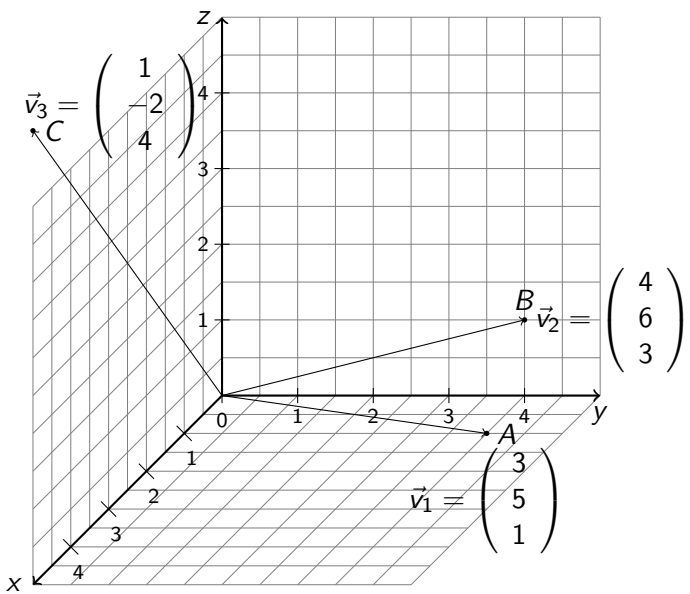
$A = (3, 5, 1)$
$B = (4, 6, 3)$

Vektoren - Ortsvektoren



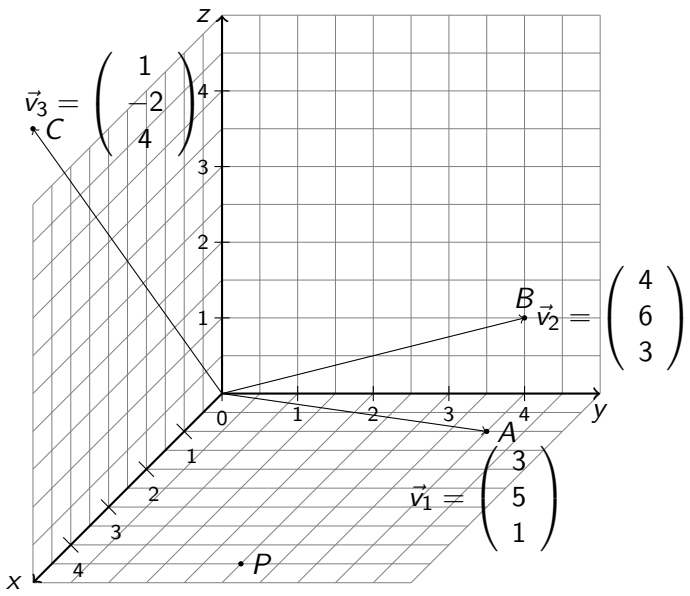
$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$

Vektoren - Ortsvektoren



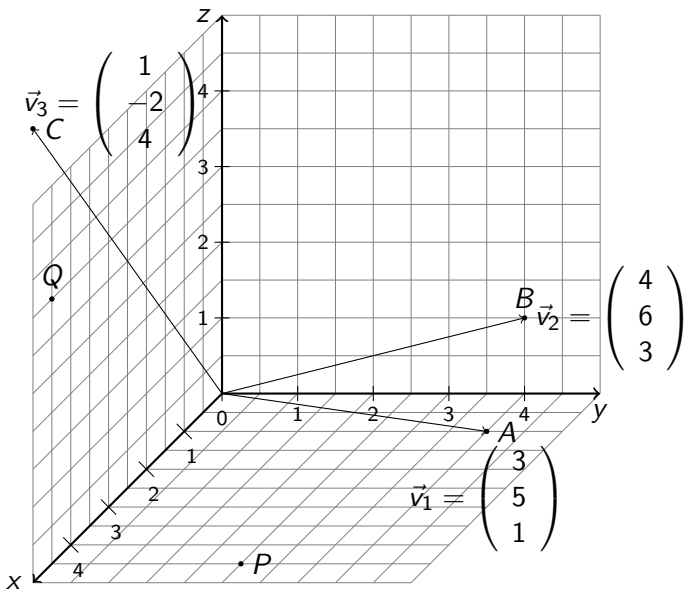
$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$

Vektoren - Ortsvektoren



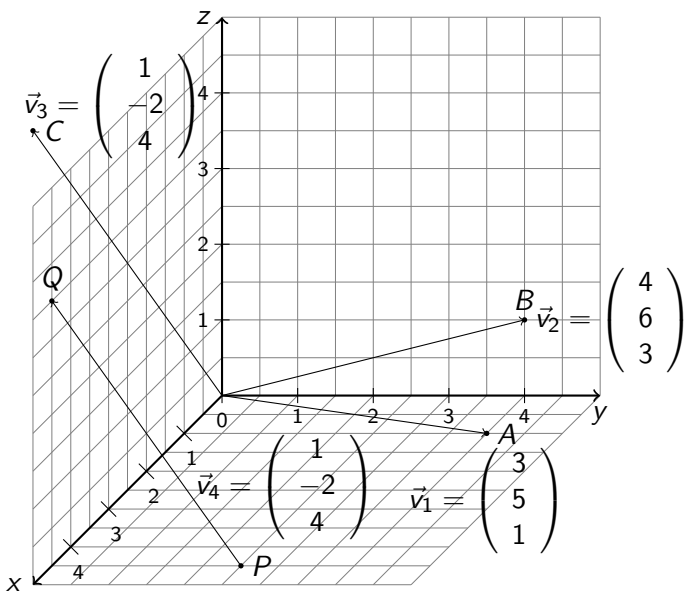
$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$

Vektoren - Ortsvektoren



$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

Vektoren - Ortsvektoren



$A = (3, 5, 1)$
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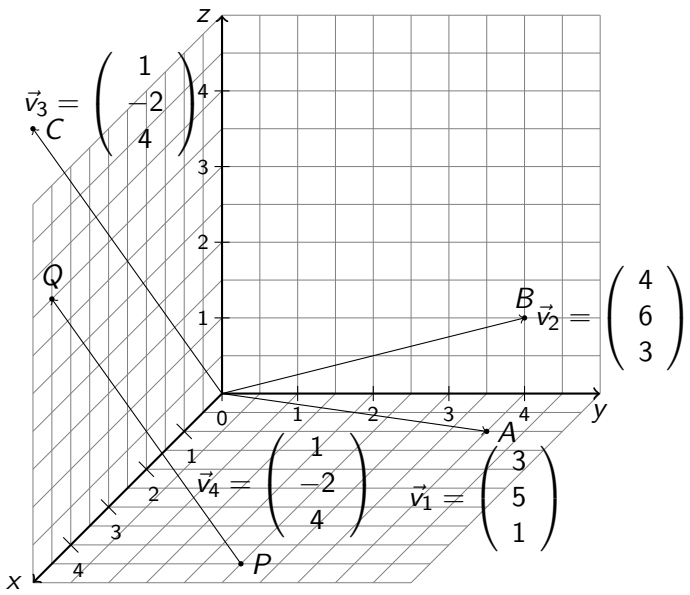
Vektoren - Ortsvektoren



$A = (3, 5, 1)$
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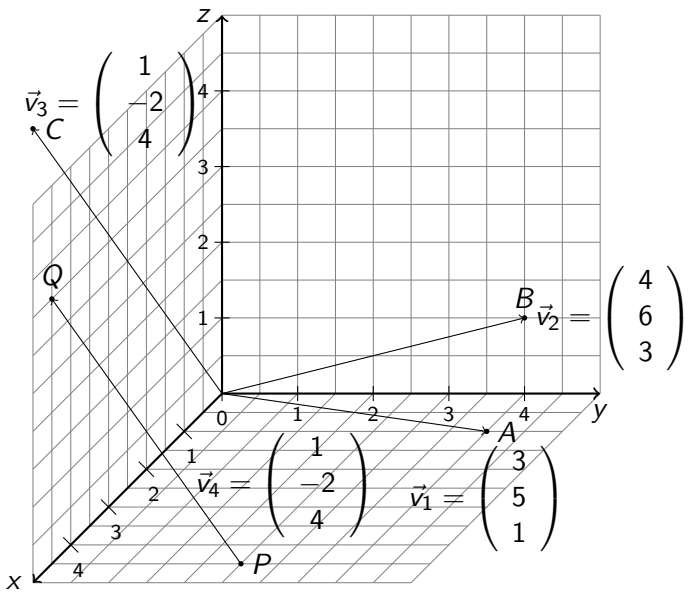
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$\vec{v}_1 = \vec{OA}$

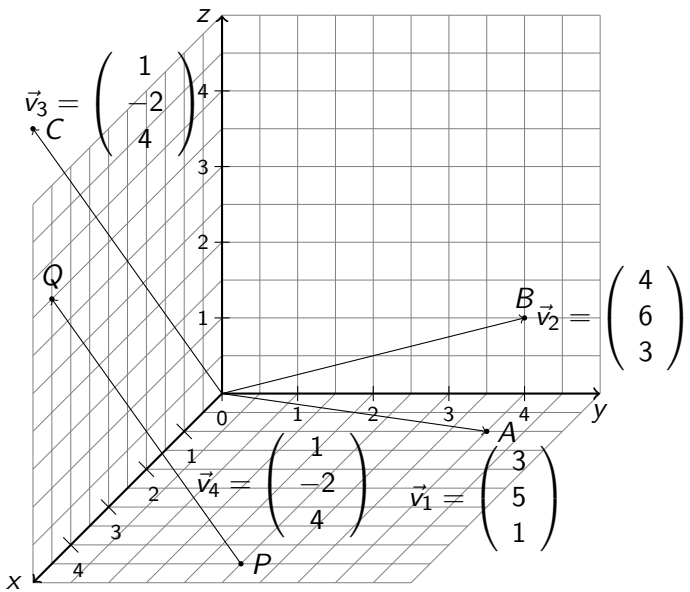
Vektoren - Ortsvektoren



$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$\vec{v}_1 = \vec{OA}$
$\vec{v}_2 = \vec{OB}$

Vektoren - Ortsvektoren



$A = (3, 5, 1)$
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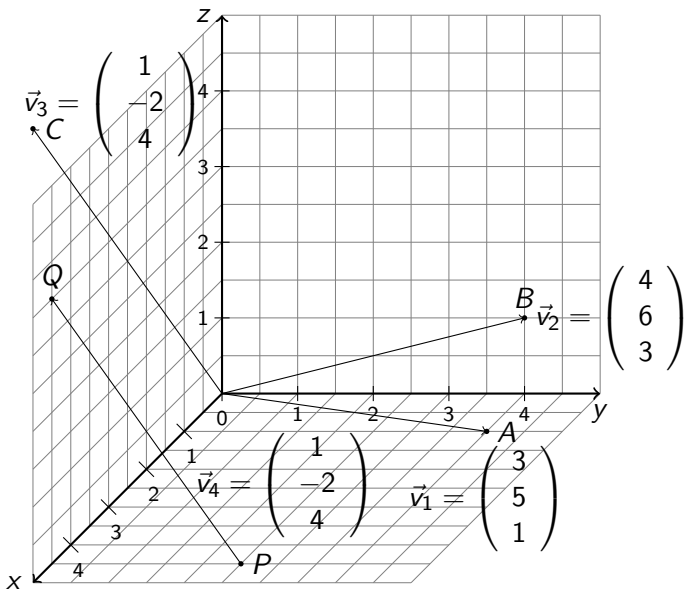
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$\vec{v}_1 = \vec{OA}$
$\vec{v}_2 = \vec{OB}$
$\vec{v}_3 = \vec{OC}$

Vektoren - Ortsvektoren

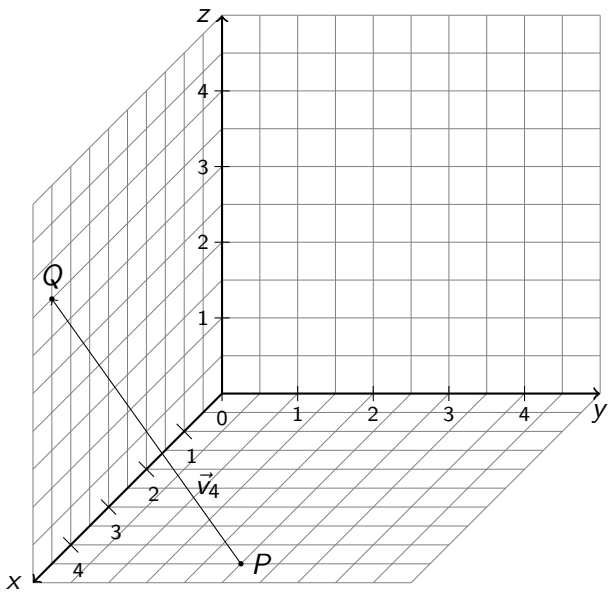


$A = (3, 5, 1)$
$B = (4, 6, 3)$
$C = (1, -2, 4)$
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$\vec{v}_1 = \vec{OA}$
$\vec{v}_2 = \vec{OB}$
$\vec{v}_3 = \vec{OC}$

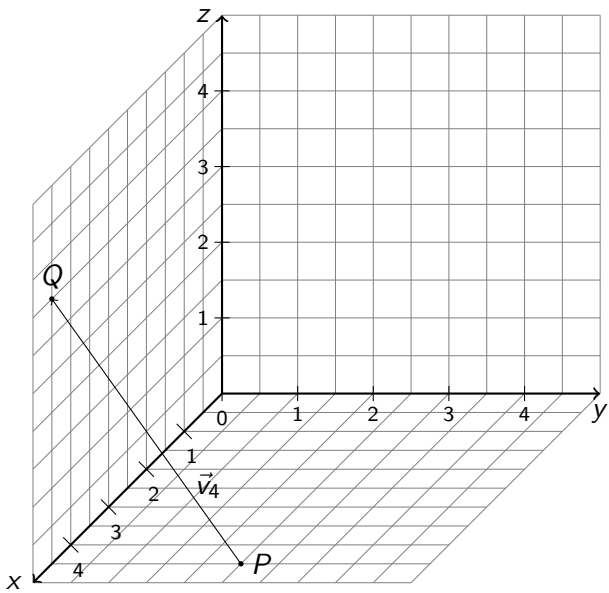
$\vec{v}_4 = \vec{PQ} = \vec{v}_3$

Vektoren durch zwei Punkte



$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

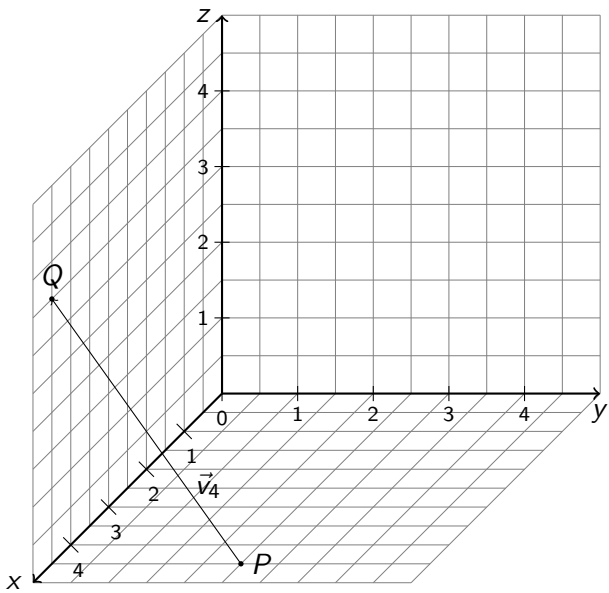
Vektoren durch zwei Punkte



$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$\vec{v}_4 = \vec{PQ} = \vec{OQ} - \vec{OP}$

Vektoren durch zwei Punkte

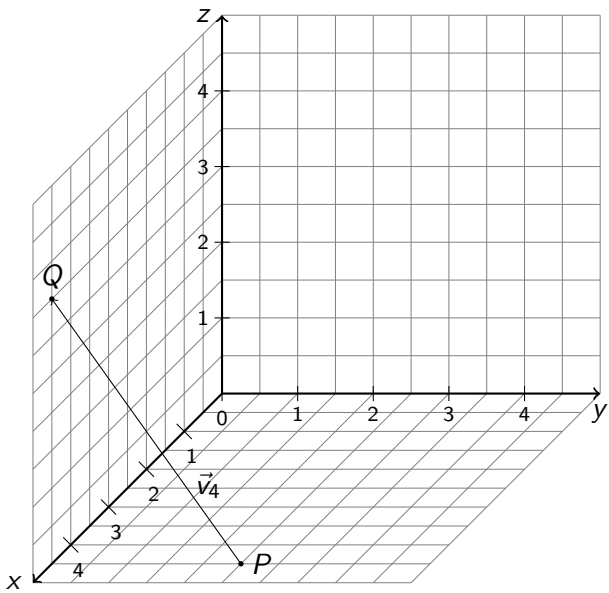


$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$$\vec{v}_4 = \vec{PQ} = \vec{OQ} - \vec{OP}$$

$$\vec{v}_4 = \begin{pmatrix} x_q - x_p \\ y_q - y_p \\ z_q - z_p \end{pmatrix}$$

Vektoren durch zwei Punkte



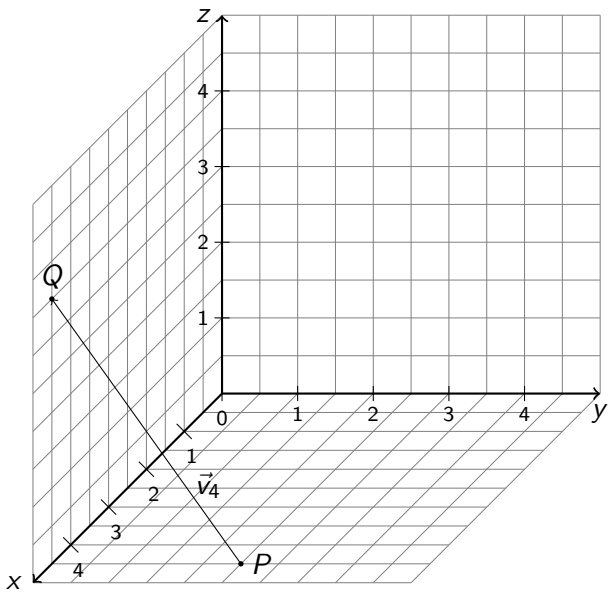
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$$\vec{v}_4 = \vec{PQ} = \vec{OQ} - \vec{OP}$$

$$\vec{v}_4 = \begin{pmatrix} x_q - x_p \\ y_q - y_p \\ z_q - z_p \end{pmatrix}$$

$$\vec{v}_4 = \begin{pmatrix} 4.5 - 3.5 \\ 0 - 2 \\ 3.5 - (-0.5) \end{pmatrix}$$

Vektoren durch zwei Punkte



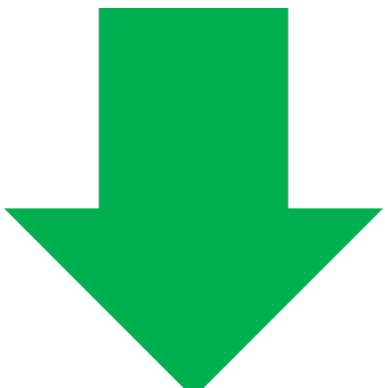
$P = (3.5, 2, -0.5)$
$Q = (4.5, 0, 3.5)$

$$\vec{v}_4 = \vec{PQ} = \vec{OQ} - \vec{OP}$$

$$\vec{v}_4 = \begin{pmatrix} x_q - x_p \\ y_q - y_p \\ z_q - z_p \end{pmatrix}$$

$$\vec{v}_4 = \begin{pmatrix} 4.5 - 3.5 \\ 0 - 2 \\ 3.5 - (-0.5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

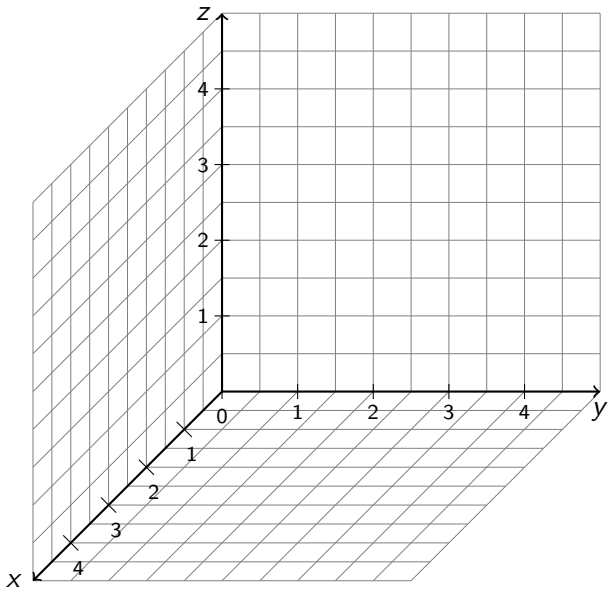
facebook.com/JeanHilftDir
Skype: JeanHilftDir



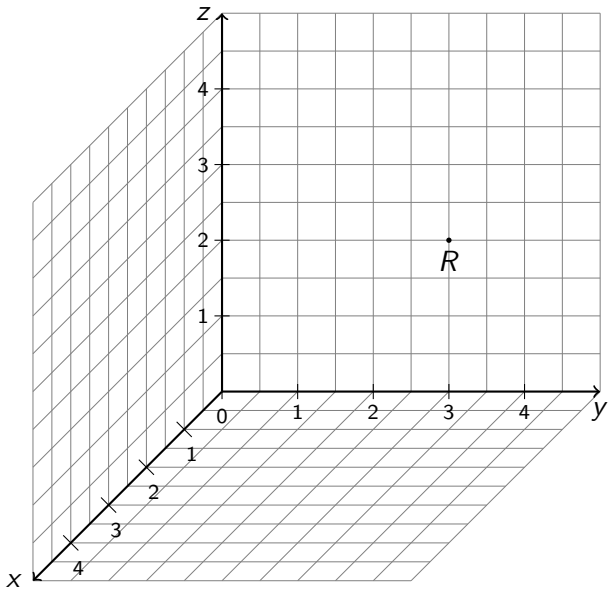
Folien: github.com/JeanHilftDir/Mathe

Analytische Geometrie - Einführung

Länge eines Vektors - 2D

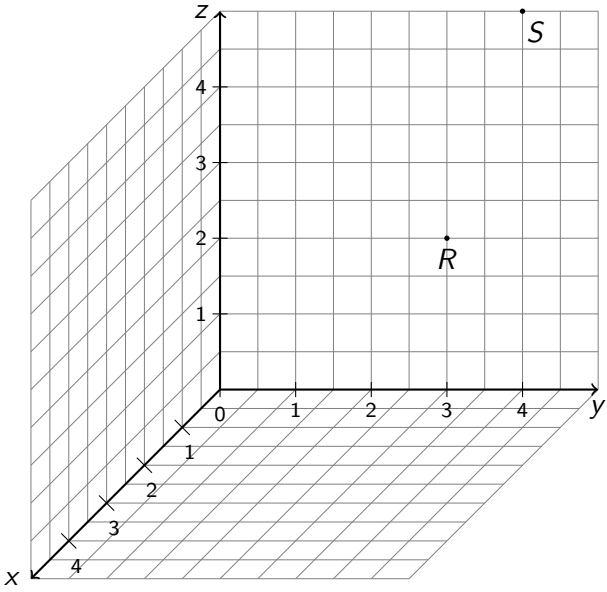


Länge eines Vektors - 2D



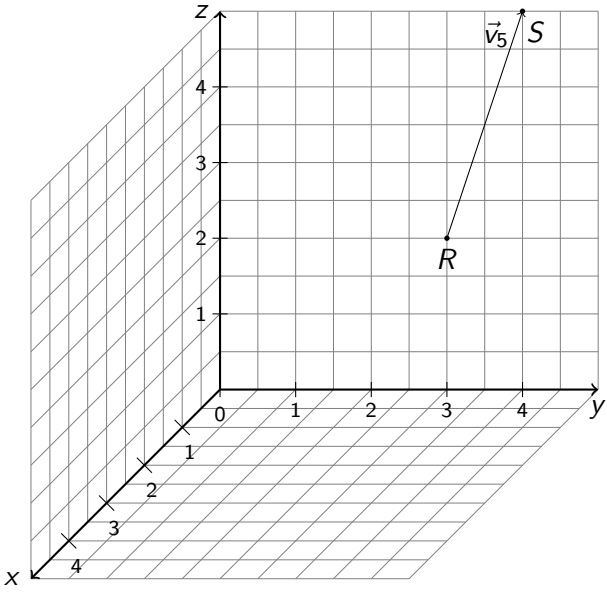
$R = (3, 2)$

Länge eines Vektors - 2D



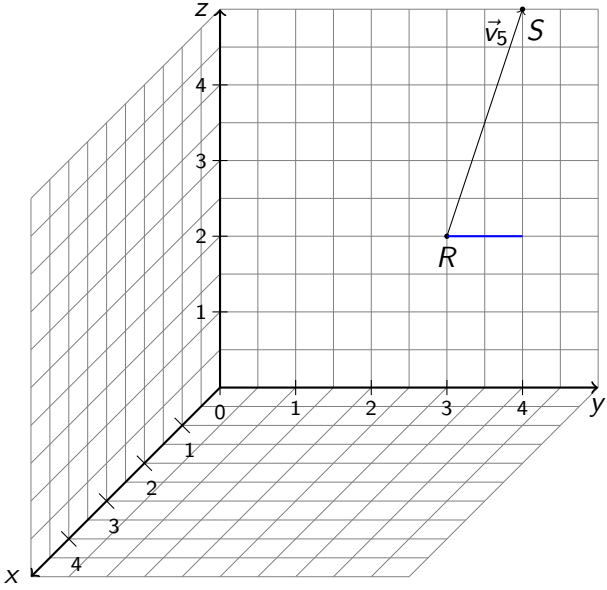
$R = (3, 2)$
$S = (4, 5)$

Länge eines Vektors - 2D



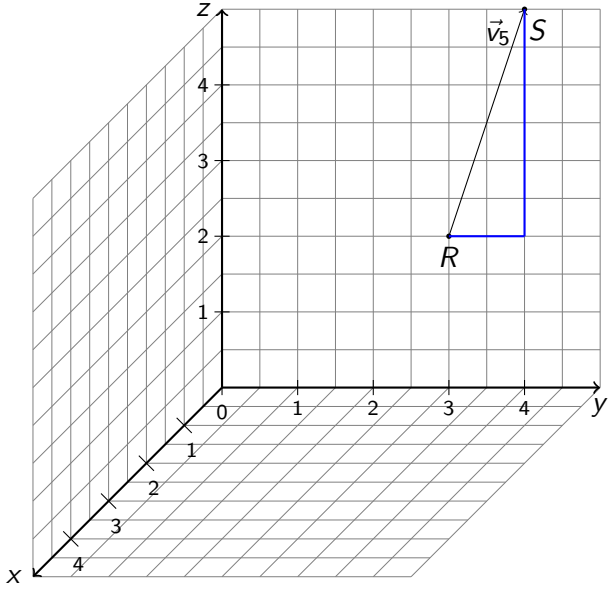
$R = (3, 2)$
$S = (4, 5)$

Länge eines Vektors - 2D



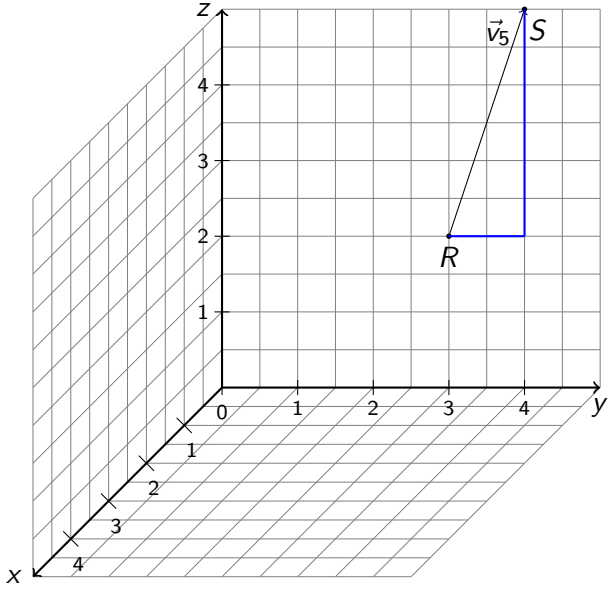
$R = (3, 2)$
$S = (4, 5)$

Länge eines Vektors - 2D



$R = (3, 2)$
$S = (4, 5)$

Länge eines Vektors - 2D

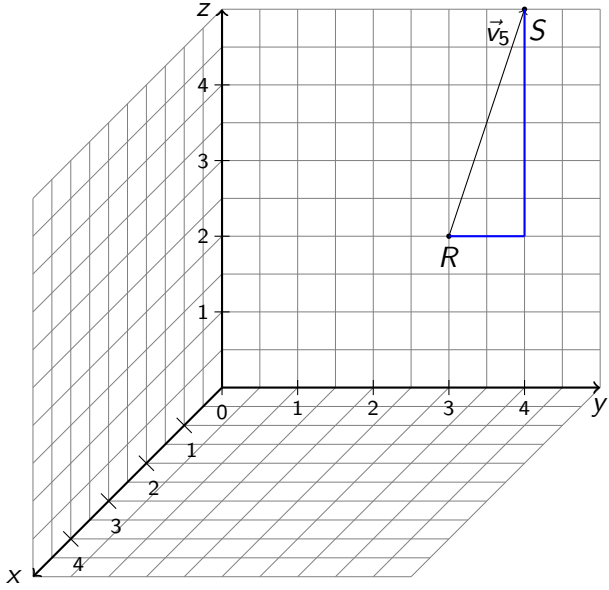


$R = (3, 2)$

$S = (4, 5)$

$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix}$

Länge eines Vektors - 2D

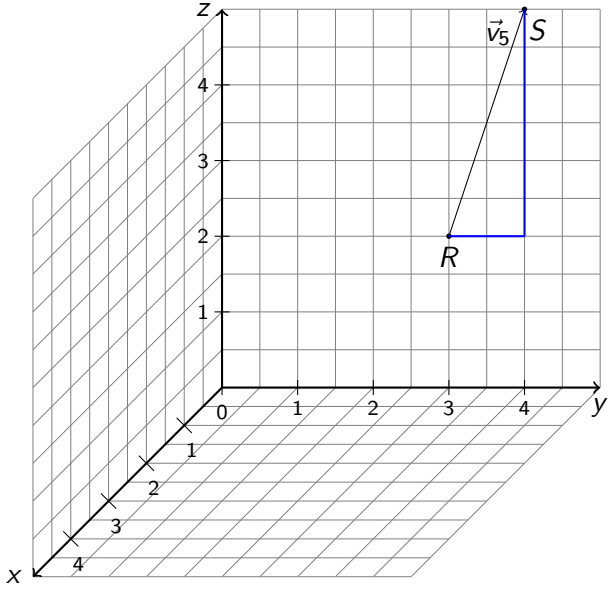


$R = (3, 2)$

$S = (4, 5)$

$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$

Länge eines Vektors - 2D



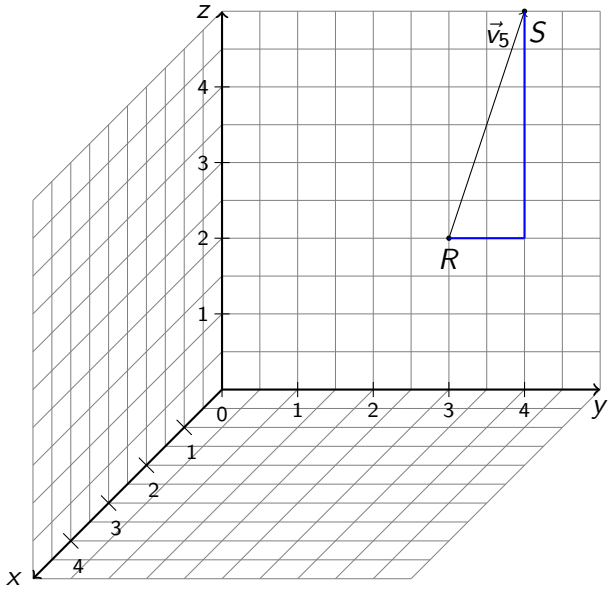
$R = (3, 2)$

$S = (4, 5)$

$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$

$|\vec{v}_5| = \sqrt{x^2 + y^2}$

Länge eines Vektors - 2D



$R = (3, 2)$

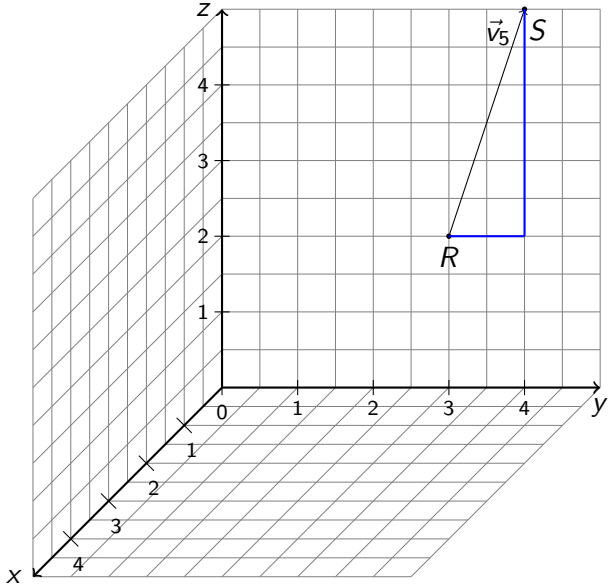
$S = (4, 5)$

$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$

$|\vec{v}_5| = \sqrt{x^2 + y^2}$

$|\vec{v}_5| = \sqrt{1^2 + 3^2}$

Länge eines Vektors - 2D



$R = (3, 2)$

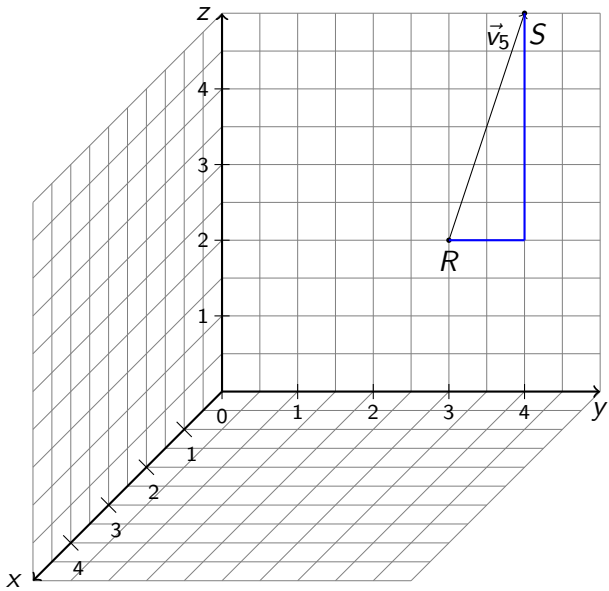
$S = (4, 5)$

$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$

$|\vec{v}_5| = \sqrt{x^2 + y^2}$

$|\vec{v}_5| = \sqrt{1^2 + 3^2} = \sqrt{10}$

Länge eines Vektors - 2D



$R = (3, 2)$

$S = (4, 5)$

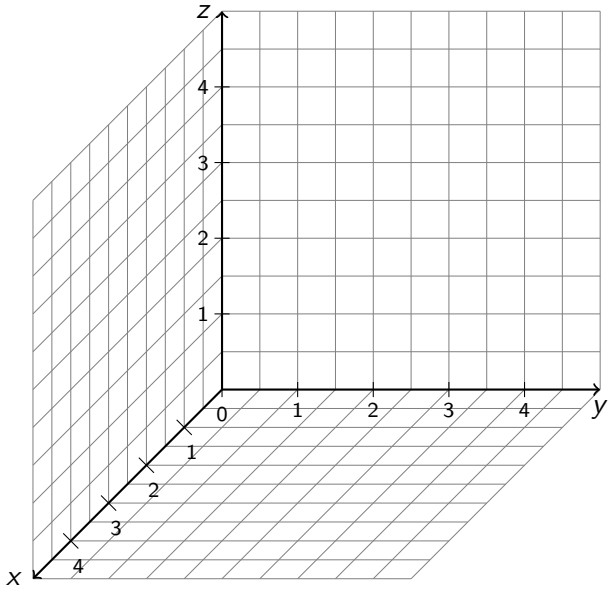
$\vec{v}_5 = \begin{pmatrix} 4-3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$

$|\vec{v}_5| = \sqrt{x^2 + y^2}$

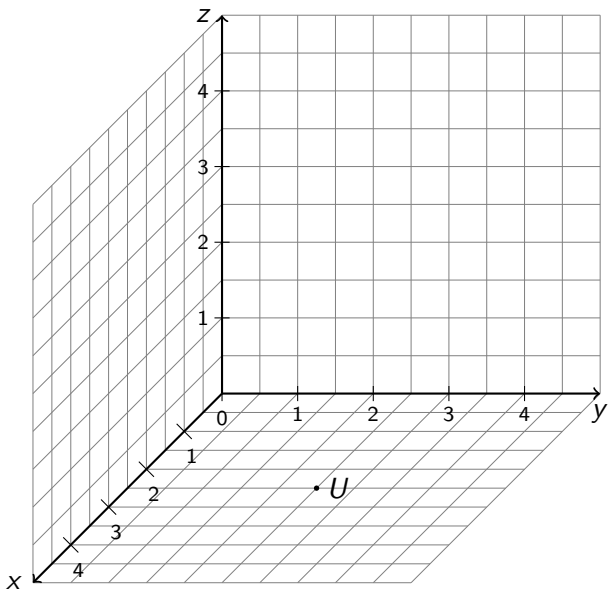
$|\vec{v}_5| = \sqrt{1^2 + 3^2} = \sqrt{10}$

$|\vec{v}_5| \approx 3.1623$

Länge eines Vektors - 3D

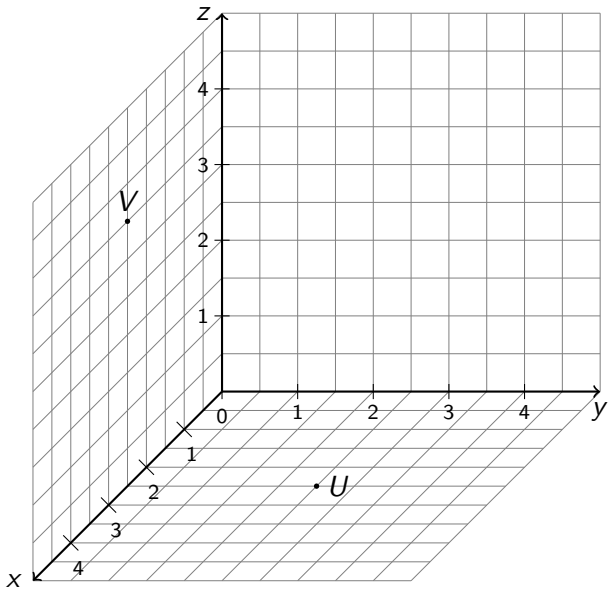


Länge eines Vektors - 3D



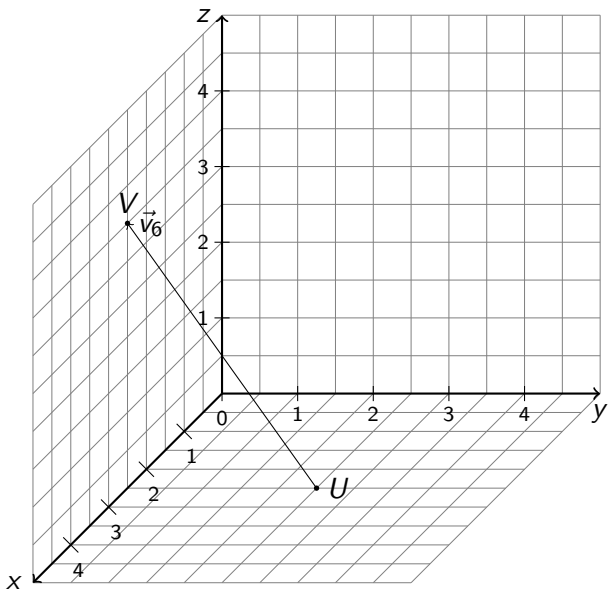
$U = (1.5, 2, -0.5)$

Länge eines Vektors - 3D



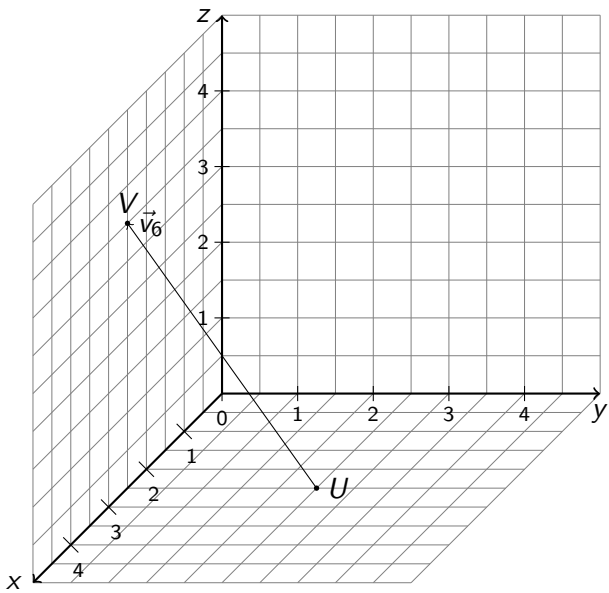
$U = (1.5, 2, -0.5)$
$V = (2.5, 0, 3.5)$

Länge eines Vektors - 3D



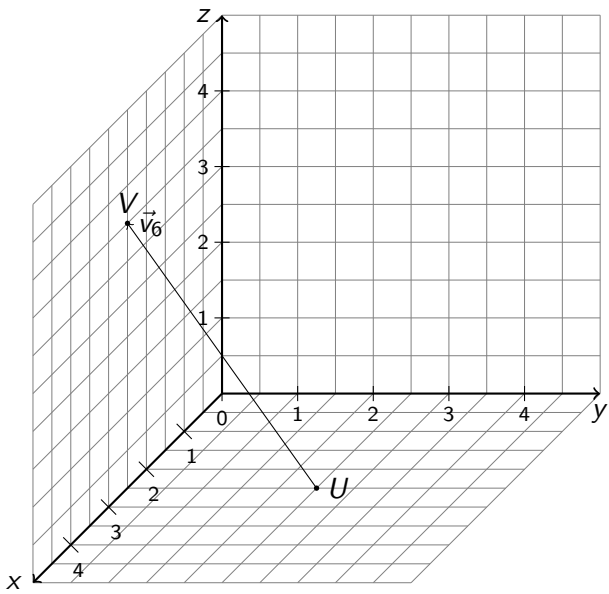
$U = (1.5, 2, -0.5)$
$V = (2.5, 0, 3.5)$

Länge eines Vektors - 3D



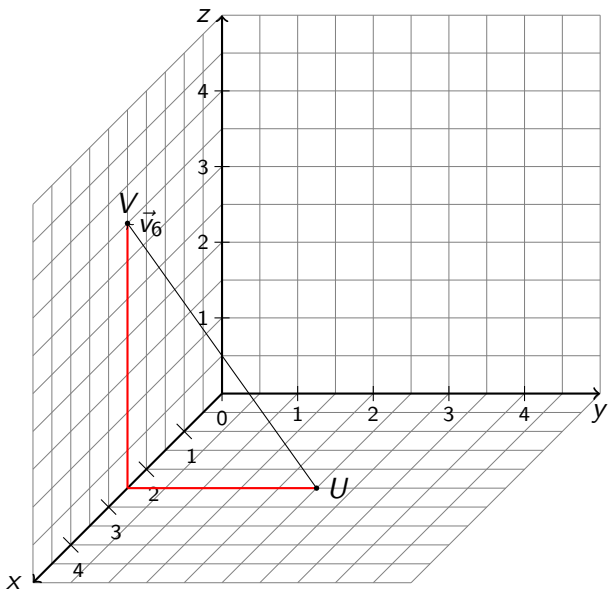
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v}_6 = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix}$$

Länge eines Vektors - 3D



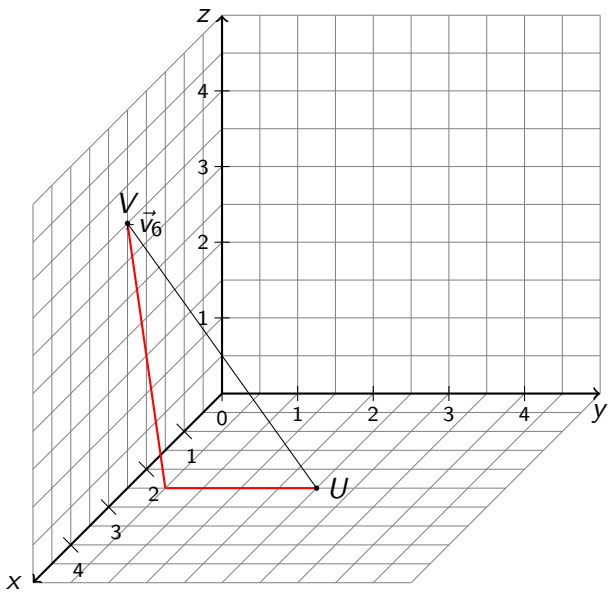
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



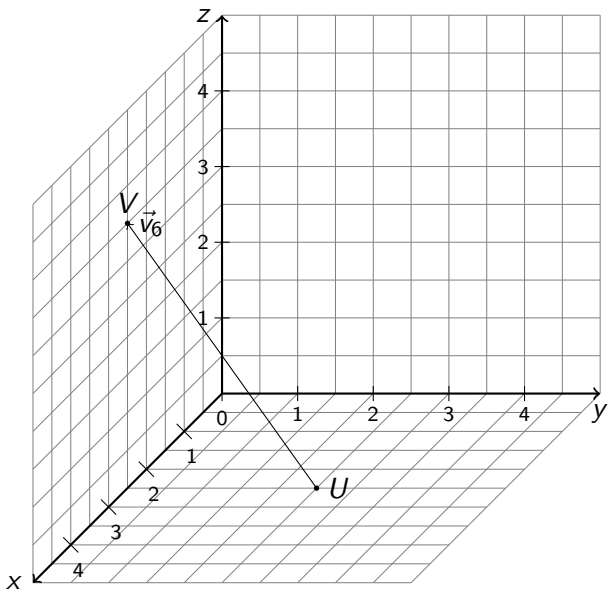
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



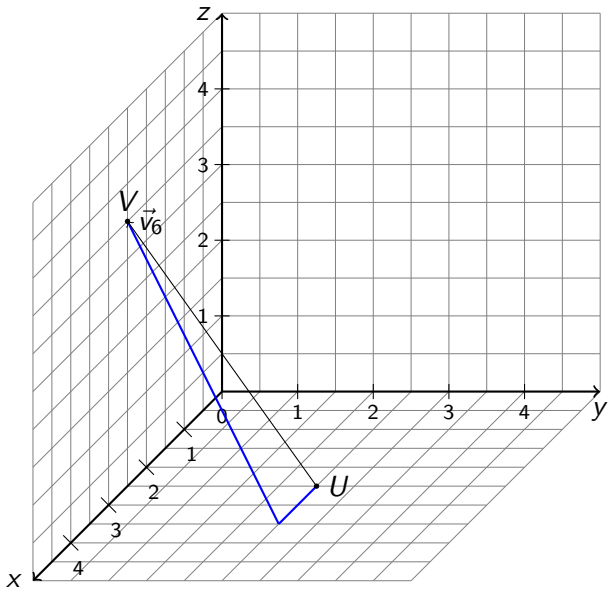
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



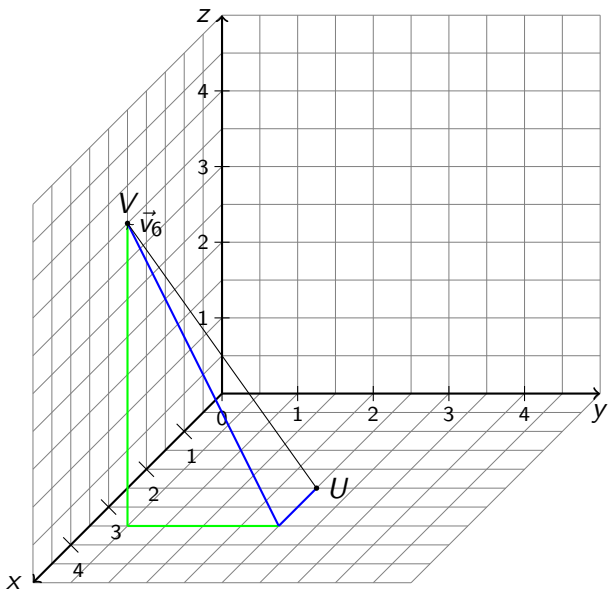
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



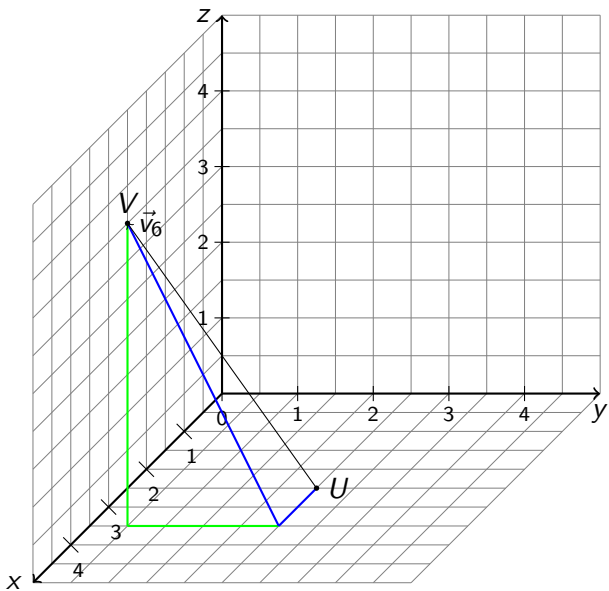
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



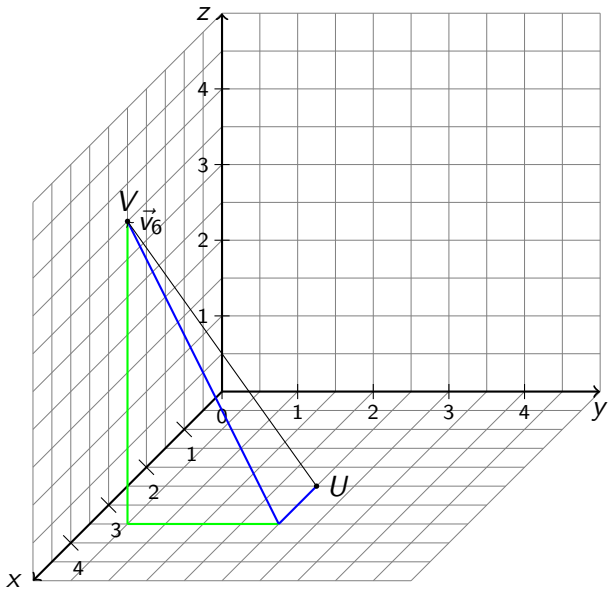
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

Länge eines Vektors - 3D



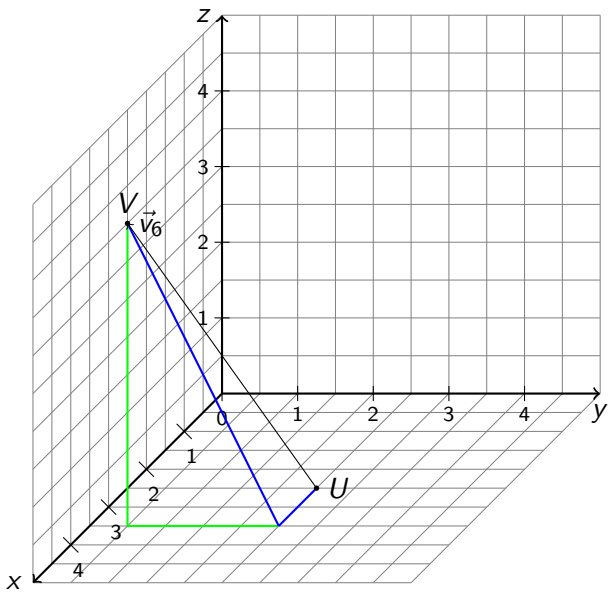
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$
$$|\vec{v_6}| = \sqrt{x^2 + \left| \begin{pmatrix} 0 \\ y \\ z \end{pmatrix} \right|^2}$$

Länge eines Vektors - 3D



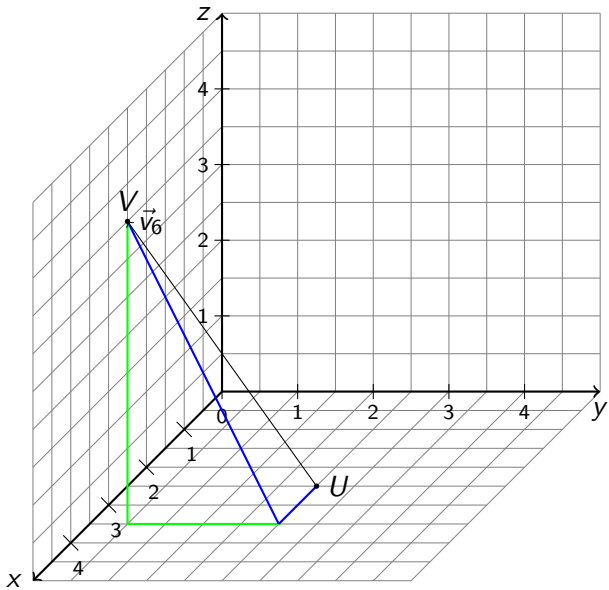
$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v}_6 = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$
$$|\vec{v}_6| = \sqrt{x^2 + \left| \begin{pmatrix} 0 \\ y \\ z \end{pmatrix} \right|^2}$$
$$|\vec{v}_6| = \sqrt{x^2 + \sqrt{y^2 + z^2}^2}$$

Länge eines Vektors - 3D



$$U = (1.5, 2, -0.5)$$
$$V = (2.5, 0, 3.5)$$
$$\vec{v}_6 = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$
$$|\vec{v}_6| = \sqrt{x^2 + \left| \begin{pmatrix} 0 \\ y \\ z \end{pmatrix} \right|^2}$$
$$|\vec{v}_6| = \sqrt{x^2 + \sqrt{y^2 + z^2}^2}$$
$$|\vec{v}_6| = \sqrt{x^2 + y^2 + z^2}$$

Länge eines Vektors - 3D



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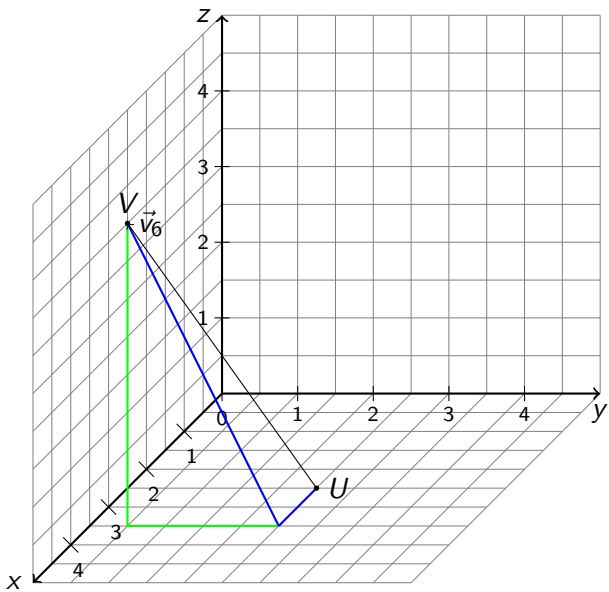
$$|\vec{v_6}| = \sqrt{x^2 + \sqrt{y^2 + z^2}^2}$$
$$|\vec{v_6}| = \sqrt{x^2 + y^2 + z^2}$$
$$|\vec{v_6}| = \sqrt{1^2 + (-2)^2 + 4^2}$$

Länge eines Vektors - 3D



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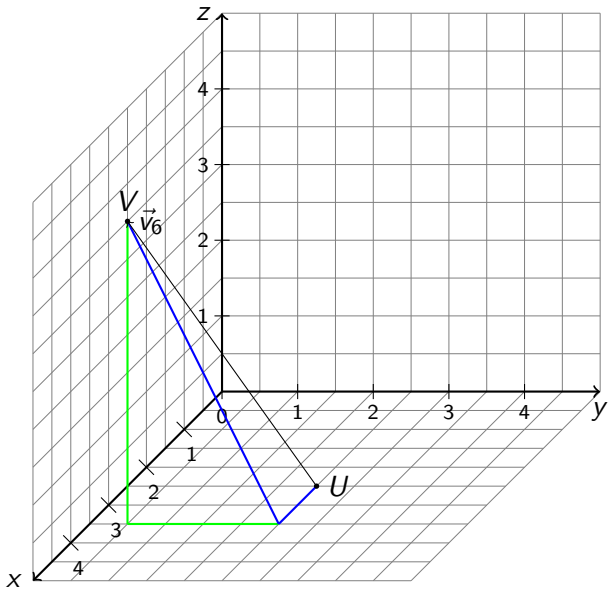
$$|\vec{v_6}| = \sqrt{x^2 + y^2 + z^2}$$
$$|\vec{v_6}| = \sqrt{1^2 + (-2)^2 + 4^2}$$
$$|\vec{v_6}| = \sqrt{1 + 4 + 16}$$

Länge eines Vektors - 3D



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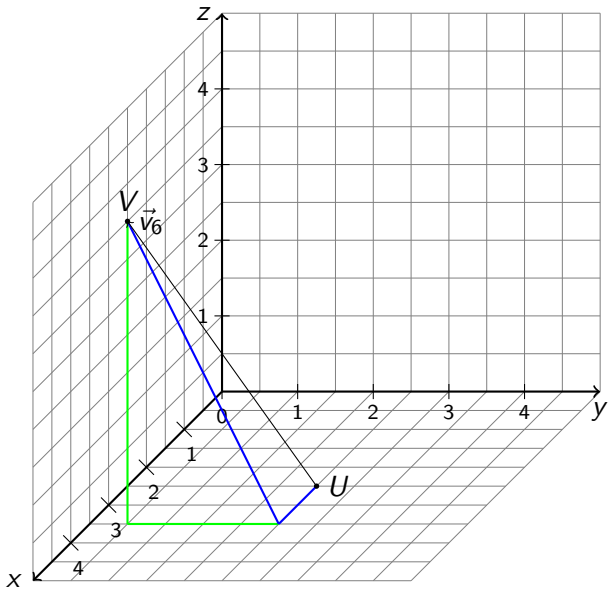
$$|\vec{v_6}| = \sqrt{x^2 + y^2 + z^2}$$

$$|\vec{v_6}| = \sqrt{1^2 + (-2)^2 + 4^2}$$
$$|\vec{v_6}| = \sqrt{1 + 4 + 16} = \sqrt{21}$$

Länge eines Vektors - 3D



$U = (1.5, 2, -0.5)$

$V = (2.5, 0, 3.5)$

$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

$$|\vec{v_6}| = \sqrt{x^2 + \left| \begin{pmatrix} 0 \\ y \\ z \end{pmatrix} \right|^2}$$

$$|\vec{v_6}| = \sqrt{x^2 + \sqrt{y^2 + z^2}^2}$$

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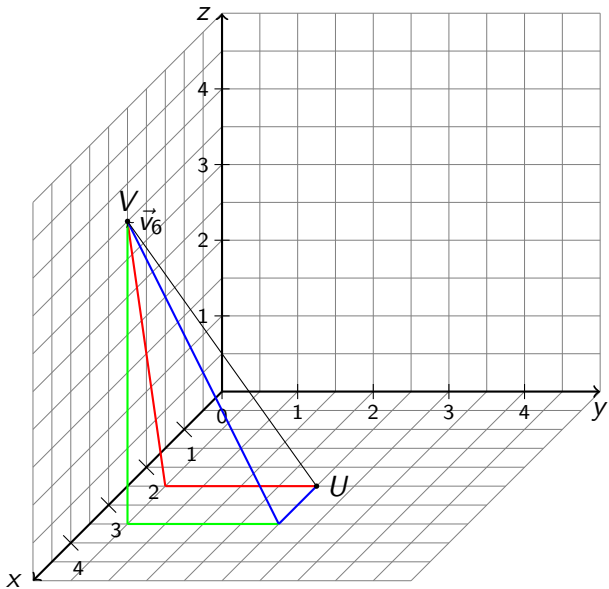
$$|\vec{v_6}| = \sqrt{1^2 + (-2)^2 + 4^2}$$

$$|\vec{v_6}| = \sqrt{1 + 4 + 16} = \sqrt{21} \approx 4.5826$$

Länge eines Vektors - 3D



$U = (1.5, 2, -0.5)$

$V = (2.5, 0, 3.5)$

$$\vec{v_6} = \begin{pmatrix} 2.5 - 1.5 \\ 0 - 2 \\ 3.5 - (-0,5) \end{pmatrix} = \begin{pmatrix} 1 \\ -2 \\ 4 \end{pmatrix}$$

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$$|\vec{v_6}| = \sqrt{1 + 4 + 16} = \sqrt{21} \approx 4.5826$$

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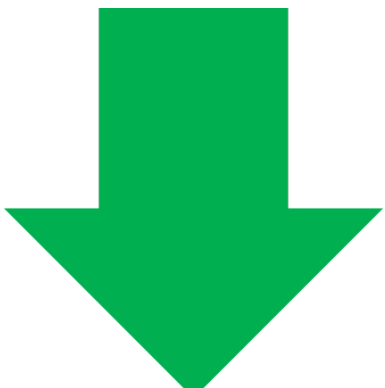
Skype: JeanHilftDir



Folien: github.com/JeanHilftDir/Mathe