

System of linear equations

$$\begin{array}{rcccc} x_1 & +2x_2 & +x_3 & = & 2 \\ 2x_1 & & +x_3 & = & 1 \\ x_1 & -x_2 & -x_3 & = & 1 \end{array}$$

Gaussian elimination with partial pivoting

$$\begin{array}{ccc|c} 1 & 2 & 1 & 2 \\ 2 & 0 & 1 & 1 \\ 1 & -1 & -1 & 1 \end{array}$$

Gaussian elimination with partial pivoting

| | | | |
|---|----|----|---|
| 1 | 2 | 1 | 2 |
| 2 | 0 | 1 | 1 |
| 1 | -1 | -1 | 1 |

Gaussian elimination with partial pivoting

| | | | | |
|--|---|----|----|---|
| | 2 | 0 | 1 | 1 |
| | 1 | 2 | 1 | 2 |
| | 1 | -1 | -1 | 1 |

Gaussian elimination with partial pivoting

| | | | | |
|--------------|---|----|----|---|
| | 2 | 0 | 1 | 1 |
| $-0.5 \cdot$ | 1 | 2 | 1 | 2 |
| $-0.5 \cdot$ | 1 | -1 | -1 | 1 |

Gaussian elimination with partial pivoting

| | | | | |
|-------|---|----|------|-----|
| | 2 | 0 | 1 | 1 |
| -0.5· | | 2 | 1/2 | 3/2 |
| -0.5· | | -1 | -3/2 | 1/2 |

Gaussian elimination with partial pivoting

| | | | | | |
|--|---|----|------|--|-----|
| | 2 | 0 | 1 | | 1 |
| | | 2 | 1/2 | | 3/2 |
| | | -1 | -3/2 | | 1/2 |

Gaussian elimination with partial pivoting

| | | | | | |
|------|---|----|------|--|-----|
| | 2 | 0 | 1 | | 1 |
| 0.5· | | 2 | 1/2 | | 3/2 |
| | | -1 | -3/2 | | 1/2 |

Gaussian elimination with partial pivoting

| | | | | |
|-------|---|------|-----|---|
| | 2 | 0 | 1 | 1 |
| 0.5 · | 2 | 1/2 | 3/2 | |
| | | -5/4 | 5/4 | |

Gaussian elimination with partial pivoting

$$\begin{array}{ccc|c} 2 & 0 & 1 & 1 \\ & 2 & 1/2 & 3/2 \\ & & -5/4 & 5/4 \end{array}$$

Gaussian elimination with partial pivoting

| | | | | |
|--|---|---|--------|-------|
| | 2 | 0 | 1 | 1 |
| | | 2 | $1/2$ | $3/2$ |
| | | | $-5/4$ | $5/4$ |

Gaussian elimination with partial pivoting

$$\begin{array}{ccc|c} 2 & 0 & 1 & 1 \\ & 2 & 1/2 & 3/2 \\ & & -5/4 & -1 \end{array}$$

Gaussian elimination with partial pivoting

| | | | | | |
|--|---|---|------|--|-----|
| | 2 | 0 | 1 | | 1 |
| | | 2 | 1/2 | | 3/2 |
| | | | -5/4 | | -1 |

Gaussian elimination with partial pivoting

| | | | | | |
|--|---|---|------|--|----|
| | 2 | 0 | 1 | | 1 |
| | | 2 | 1/2 | | 1 |
| | | | -5/4 | | -1 |

Gaussian elimination with partial pivoting

| | | | | |
|--|---|---|------|----|
| | 2 | 0 | 1 | 1 |
| | | 2 | 1/2 | 1 |
| | | | -5/4 | -1 |

Gaussian elimination with partial pivoting

| | | | | | |
|--|---|---|------|--|----|
| | 2 | 0 | 1 | | 1 |
| | | 2 | 1/2 | | 1 |
| | | | -5/4 | | -1 |