

## Transformacja tensora naprężenia z wykorzystaniem MAPLE

$$\sigma' = a \sigma a^T$$

```
> restart: with(linalg):
```

```
> a:=Matrix([[1/3,2/3,2/3],[2/3,1/3,-2/3],[2/3,-2/3,1/3]]);
```

$$a := \begin{bmatrix} \frac{1}{3} & \frac{2}{3} & \frac{2}{3} \\ \frac{2}{3} & \frac{1}{3} & -\frac{2}{3} \\ \frac{2}{3} & -\frac{2}{3} & \frac{1}{3} \end{bmatrix}$$

```
> innerprod(a, transpose(a));
```

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

```
> sigma[stare]:=Matrix([[1,0,0],[0,2,0],[0,0,3]]);
```

$$\sigma_{stare} := \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

```
> sigma[nowe]:=innerprod(a,sigma[stare], transpose(a));
```

$$\sigma_{nowe} := \begin{bmatrix} \frac{7}{3} & -\frac{2}{3} & 0 \\ -\frac{2}{3} & 2 & -\frac{2}{3} \\ 0 & -\frac{2}{3} & \frac{5}{3} \end{bmatrix}$$

```
> innerprod(transpose(a), sigma[nowe],a);
```

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$