```
Eigenvalues[{{ea, λ}, {λ, ea}}]
```

$$\{ea - \lambda, ea + \lambda\}$$

```
Eigenvalues[{{ea, λ Sqrt[2], 0}, {λ Sqrt[2], eb, λ Sqrt[2]}, {0, λ Sqrt[2], ea}}]
```

$$\left\{ea, \frac{1}{2}\left(ea + eb - \sqrt{ea^2 - 2\,ea\,eb + eb^2 + 16\,\lambda^2}\right), \frac{1}{2}\left(ea + eb + \sqrt{ea^2 - 2\,ea\,eb + eb^2 + 16\,\lambda^2}\right)\right\}$$

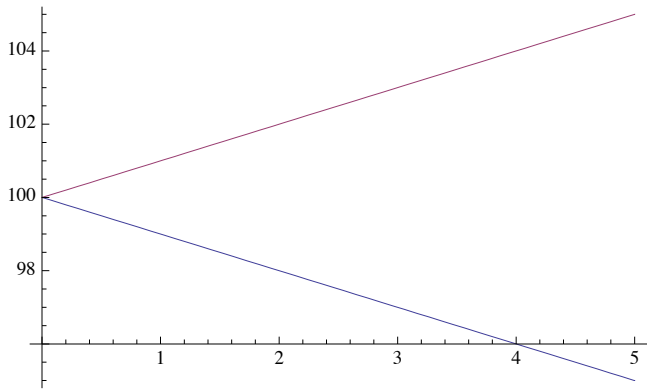
```
Eigenvalues[{{ea, λ Sqrt[3], 0, 0}, {λ Sqrt[3], eb, 2 λ, 0}, {0, 2 λ, eb, λ Sqrt[3]}, {0, 0, λ Sqrt[3], ea}}]
```

$$\left\{\frac{1}{2}\left(ea + eb - 2\,\lambda - \sqrt{ea^2 - 2\,ea\,eb + eb^2 + 4\,ea\,\lambda - 4\,eb\,\lambda + 16\,\lambda^2}\right),\right.$$
$$\frac{1}{2}\left(ea + eb - 2\,\lambda + \sqrt{ea^2 - 2\,ea\,eb + eb^2 + 4\,ea\,\lambda - 4\,eb\,\lambda + 16\,\lambda^2}\right),$$
$$\frac{1}{2}\left(ea + eb + 2\,\lambda - \sqrt{ea^2 - 2\,ea\,eb + eb^2 - 4\,ea\,\lambda + 4\,eb\,\lambda + 16\,\lambda^2}\right),$$
$$\left.\frac{1}{2}\left(ea + eb + 2\,\lambda + \sqrt{ea^2 - 2\,ea\,eb + eb^2 - 4\,ea\,\lambda + 4\,eb\,\lambda + 16\,\lambda^2}\right)\right\}$$

```
Eigenvalues[{{100, λ}, {λ, 100}}]
```

$$\{100 - \lambda, 100 + \lambda\}$$

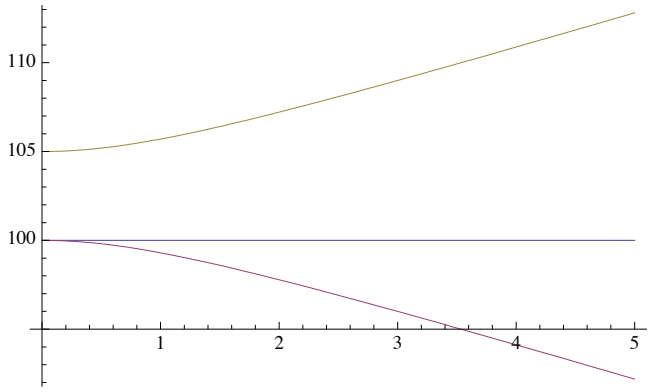
```
Plot[{100 - λ, 100 + λ}, {λ, 0, 5}]
```




```
Eigenvalues[{{100, λ Sqrt[2], 0}, {λ Sqrt[2], 105, λ Sqrt[2]}, {0, λ Sqrt[2], 100}}]
```

$$\left\{100, \frac{1}{2}\left(205 - \sqrt{25 + 16\,\lambda^2}\right), \frac{1}{2}\left(205 + \sqrt{25 + 16\,\lambda^2}\right)\right\}$$

```
Plot[{100, 1/2 (205 - Sqrt[25 + 16 λ^2]), 1/2 (205 + Sqrt[25 + 16 λ^2])}, {λ, 0, 5}]
```




```
Eigenvalues[{{100, λ Sqrt[3], 0, 0}, {λ Sqrt[3], 105, 2 λ, 0}, {0, 2 λ, 105, λ Sqrt[3]}, {0, 0, λ Sqrt[3], 100}}]
```

$$\left\{\frac{1}{2}\left(205-2\lambda-\sqrt{25-20\lambda+16\lambda^2}\right),\ \frac{1}{2}\left(205-2\lambda+\sqrt{25-20\lambda+16\lambda^2}\right),\right.$$
$$\left.\frac{1}{2}\left(205+2\lambda-\sqrt{25+20\lambda+16\lambda^2}\right),\ \frac{1}{2}\left(205+2\lambda+\sqrt{25+20\lambda+16\lambda^2}\right)\right\}$$

```
Plot[{1/2 (205 - 2 λ - Sqrt[25 - 20 λ + 16 λ^2]), 1/2 (205 - 2 λ + Sqrt[25 - 20 λ + 16 λ^2]),
  1/2 (205 + 2 λ - Sqrt[25 + 20 λ + 16 λ^2]), 1/2 (205 + 2 λ + Sqrt[25 + 20 λ + 16 λ^2])}, {λ, 0, 5}]
```