1 - 10 Inverse

Find the inverse by Gauss-Jordan (or by numbered line (4*), p. 304, if n = 2). Check by using numbered line (1), p. 301.

1. $\begin{pmatrix} 1.80 & -2.32 \\ -0.25 & 0.60 \end{pmatrix}$

```
Clear["Global`*"]
```

```
e1 = {{1.80, -2.32}, {-0.25, 0.60}} // MatrixForm
```

$$\begin{pmatrix} 1.80 & -2.32 \\ -0.25 & 0.60 \end{pmatrix}$$

```
{{1.8, -2.32}, {-0.25, 0.6}}
```

```
e2 = Inverse[e1]
```

```
{{1.2, 4.64}, {0.5, 3.6}}
```

The above cell matches the answer in the text.

```
e3 = e1.e2 // MatrixForm
```

$$\begin{pmatrix} 1. & 0. \\ 0. & 1. \end{pmatrix}$$

```
Clear["Global`*"]
```

3. $\begin{pmatrix} 0.3 & -0.1 & 0.5 \\ 2 & 6 & 4 \\ 5 & 0 & 9 \end{pmatrix}$

```
e1 = {{0.3, -0.1, 0.5}, {2, 6, 4}, {5, 0, 9}} // MatrixForm
```

$$\begin{pmatrix} 0.3 & -0.1 & 0.5 \\ 2 & 6 & 4 \\ 5 & 0 & 9 \end{pmatrix}$$

```
{{0.3, -0.1, 0.5}, {2, 6, 4}, {5, 0, 9}}
```

```
e2 = Inverse[e1]
```

```
{{54., 0.9, -3.4}, {2., 0.2, -0.2}, {-30., -0.5, 2.}}
```

The above cell matches the answer in the text. Checking,

```
e3 = e1.e2 // MatrixForm
```

$$\begin{pmatrix} 1. & 0. & 0. \\ 0. & 1. & 0. \\ 0. & 0. & 1. \end{pmatrix}$$

5. $\begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 5 & 4 & 1 \end{pmatrix}$

```
Clear["Global`*"]
```

```
e1 = {{1, 0, 0}, {2, 1, 0}, {5, 4, 1}}
```

```
{{1, 0, 0}, {2, 1, 0}, {5, 4, 1}}
```

```
e2 = Inverse[e1]
```

```
{{1, 0, 0}, {-2, 1, 0}, {3, -4, 1}}
```

The above cell matches the answer in the text. Checking,

```
e3 = e1.e2 // MatrixForm
```

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

7. $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

```
Clear["Global`*"]
```

```
e1 = {{0, 1, 0}, {1, 0, 0}, {0, 0, 1}}
```

```
{{0, 1, 0}, {1, 0, 0}, {0, 0, 1}}
```

```
e2 = Inverse[e1]
```

```
{{0, 1, 0}, {1, 0, 0}, {0, 0, 1}}
```

The above cell matches the answer in the text. Checking,

```
e3 = e1.e2 // MatrixForm
```

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

9. $\begin{pmatrix} 0 & 8 & 0 \\ 0 & 0 & 4 \\ 2 & 0 & 0 \end{pmatrix}$

```
Clear["Global`*"]
```

```
e1 = {{0, 8, 0}, {0, 0, 4}, {2, 0, 0}} // MatrixForm
```

$$\begin{pmatrix} 0 & 8 & 0 \\ 0 & 0 & 4 \\ 2 & 0 & 0 \end{pmatrix}$$

```
{{0, 8, 0}, {0, 0, 4}, {2, 0, 0}}
```

```
e2 = Inverse[e1]
```

$$\left\{\left\{0, 0, \frac{1}{2}\right\}, \left\{\frac{1}{8}, 0, 0\right\}, \left\{0, \frac{1}{4}, 0\right\}\right\}$$

The above cell matches the answer in the text. Checking,

```
e3 = e1.e2 // MatrixForm
```

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