Facitliste

1.a:

```
> solve(z^2+2*z-2-4*I);
```

$$1 + I, -3 - I$$

1.b:

```
> solve(z^2-(5+5*I)*z+13*I);
```

$$3 + 2\,I, 2 + 3\,I$$

1.c:

```
> solve(I*z^2-(2+3*I)*z+1+5*I);
```

$$2 - 3\,I, 1 + I$$

1.d:

```
> solve((z+1)^2=3+4*I);
```

$$1 + I, -3 - I$$

2:

```
> solve(z^2-4*I*z-1+4*I);
```

$$1, -1 + 4\,I$$

```
> s:=solve(z^4-4*I*z^2-1+4*I);
```

$$s := \sqrt{-1 + 4\,I}, -\sqrt{-1 + 4\,I}, 1, -1$$

```
> evalc(s[1]);
```

$$\frac{\sqrt{-2 + 2\sqrt{17}}}{2} + \frac{1}{2} I \sqrt{2 + 2\sqrt{17}}$$

```
> evalc(s[2]);
```

$$-\frac{\sqrt{-2 + 2\sqrt{17}}}{2} - \frac{1}{2} I \sqrt{2 + 2\sqrt{17}}$$

3:

```
> A:=sqrt(6)+sqrt(2)+I*(sqrt(6)-sqrt(2));
```

$$A := \sqrt{6} + \sqrt{2} + (\sqrt{6} - \sqrt{2})\,I$$

```
> B:=expand(A^2);
```

$$B := 4\sqrt{6}\sqrt{2} + 8\,I$$

```
> convert(B,polar);
```

$$\mathrm{polar}\left(16, \arctan\left(\frac{\sqrt{6}\sqrt{2}}{6}\right)\right)$$

```
> simplify(arctan(sqrt(6)*sqrt(2)/6));
```

$$\frac{\pi}{6}$$

```
> s:=solve(z^2=8*(sqrt(3)+I));
```

$$s := 2\sqrt{2\,I + 2\sqrt{3}}, -2\sqrt{2\,I + 2\sqrt{3}}$$

```
> evalc(s[1]);evalc((s[2]));
```

$$\sqrt{6} + \sqrt{2} + (\sqrt{6} - \sqrt{2})\,I$$
$$-\sqrt{6} - \sqrt{2} + (-\sqrt{6} + \sqrt{2})\,I$$

5:

```
> solve(z^4+2*z^2-8);
```

$$2\,I,\ -2\,I,\ \sqrt{2},\ -\sqrt{2}$$

```
> factor(z^4+2*z^2-8);
```

$$(z^2+4)\,(z^2-2)$$

```
>
```