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FourierTransform[D[UnitStep[t - 5], t], t,  $\Omega$ , FourierParameters -> {1, -1}]
```

$$e^{-5i\Omega}$$

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FourierTransform[D[D[UnitStep[t], t], t], t,  $\Omega$ , FourierParameters -> {1, -1}]
```

$$i\Omega$$

```
FourierTransform[Cos[ $\Omega t - 3$ ] * UnitStep[t], t,  $\Omega$ , FourierParameters -> {1, -1}]
```

$$\frac{1}{4} \left( \frac{2i}{-\Omega + \Omega 0} + 2\pi \text{DiracDelta}[\Omega - \Omega 0] \right) (\text{Cos}[3] - i \text{Sin}[3]) + \frac{1}{4} \left( -\frac{2i}{\Omega + \Omega 0} + 2\pi \text{DiracDelta}[\Omega + \Omega 0] \right) (\text{Cos}[3] + i \text{Sin}[3])$$

```
FourierTransform[Sin[ $\Omega t - 5$ ] * UnitStep[t], t,  $\Omega$ , FourierParameters -> {1, -1}]
```

$$-\frac{1}{4} i \left( \frac{2i}{-\Omega + \Omega 0} + 2\pi \text{DiracDelta}[\Omega - \Omega 0] \right) (\text{Cos}[5] - i \text{Sin}[5]) + \frac{1}{4} i \left( -\frac{2i}{\Omega + \Omega 0} + 2\pi \text{DiracDelta}[\Omega + \Omega 0] \right) (\text{Cos}[5] + i \text{Sin}[5])$$