In [ ]:
```
import numpy as np
import matplotlib.pyplot as plt
import scienceplots
plt.style.use(['science'])
```

Дано:

$$f_1(x) = \frac{1}{20}\left[10\cos(x) + x^2\right]; \quad f_2(x)1 + \cos\left(\frac{x}{3}\right).$$

$$x \in [0, 2\pi]; \quad dx = \frac{\pi}{100}.$$

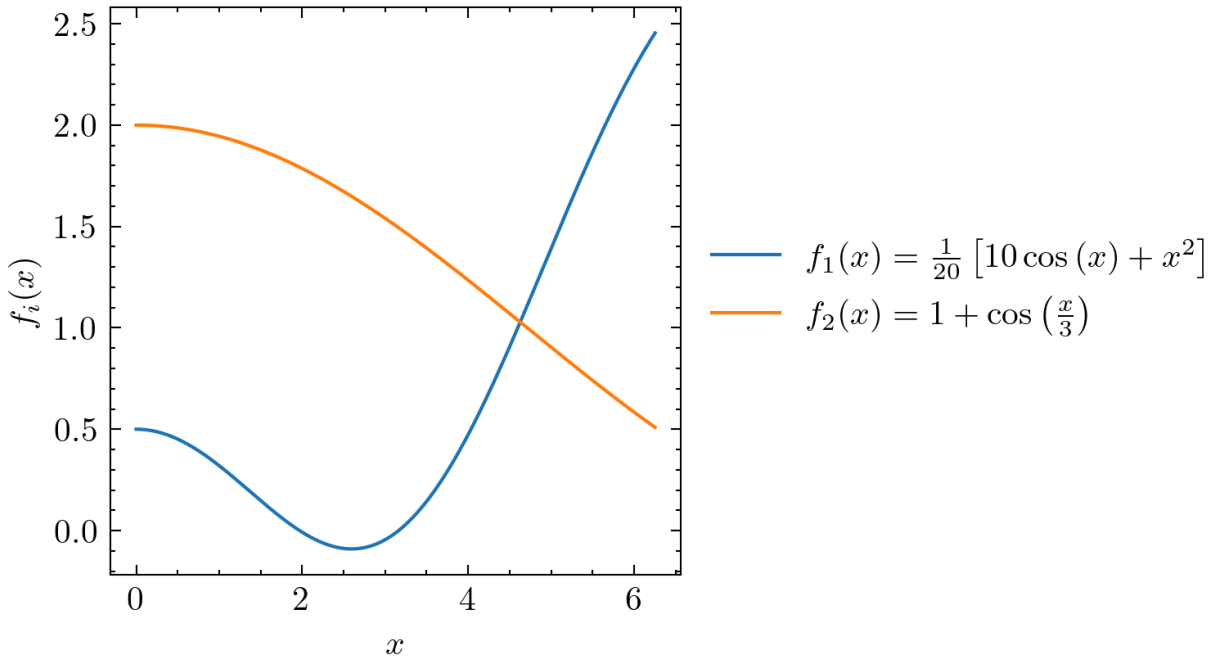
In [ ]:
```
func1 = lambda arg: (10 * np.cos(x) + x**2) / 20
label1 = r"$f_1(x) = \frac{1}{20}\left[10 \cos{(x) + x^2}\right]$"
color1 = "tab:blue"

func2 = lambda arg: 1 + np.cos(x / 3)
label2 = r"$f_2(x) = 1 + \cos{\left( \frac{x}{3} \right)}$"
color2 = "tab:orange"
```

In [ ]:
```
x = np.arange(0, 2 * np.pi, np.pi / 100)
```

Посторим графики функций в одной системе координатных осей

In [3]:
```
fig, ax = plt.subplots(1, 1, figsize = (3, 3), dpi = 300)
ax.set_xlabel("$x$")
ax.set_ylabel("$f_i(x)$")
ax.plot(x, func1(x), label = label1, color = color1)
ax.plot(x, func2(x), label = label2, color = color2)
fig.legend(bbox_to_anchor = (0.9, 0.5), loc = 'center left')
plt.show()
```

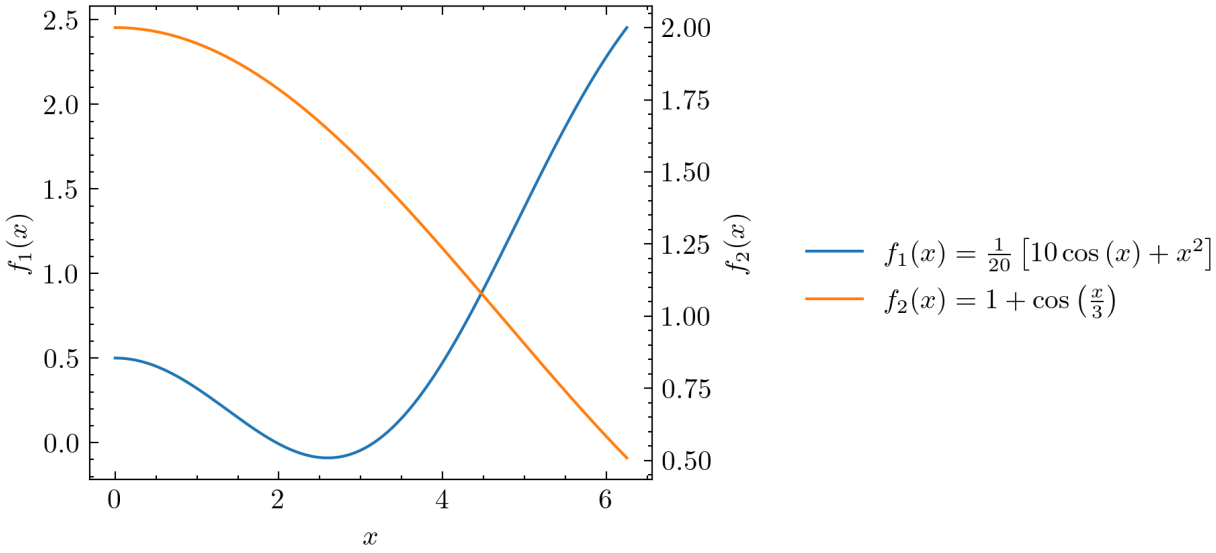


Посторим графики функций в системе координат с одной x-осью и y-осями с двух сторон.

In [4]:
```
fig, ax1 = plt.subplots(1, 1, figsize = (4, 3), dpi = 300)
ax1.set_xlabel("$x$")
ax1.set_ylabel("$f_1(x)$")
ax1.plot(x, func1(x), label = label1, color = color1)

ax2 = ax1.twinx()
ax2.set_ylabel("$f_2(x)$")
ax2.plot(x, func2(x), label = label2, color = color2)

fig.tight_layout()
fig.legend(bbox_to_anchor = (1, 0.5), loc = 'center left')
plt.show()
```



Посторим графики функций в разных координатных осях

In [5]:
```
fig, (ax1, ax2) = plt.subplots(1, 2, figsize = (6, 3), dpi = 300)
ax1.set_xlabel("$x$")
ax1.set_ylabel(label1)
ax1.plot(x, func1(x), label = label1, color = color1)

ax2.set_xlabel("$x$")
ax2.set_ylabel(label2)
ax2.plot(x, func2(x), label = label2, color = color2)

fig.tight_layout()
plt.show()
```