

### Hint to Exercise 4.2/66

Use that

$$0 \leq \sin x \leq 1 \quad \text{for } 0 \leq x \leq \frac{\pi}{2}$$

to obtain that

$$0 \leq x \sin x \leq x \quad \text{for } 0 \leq x \leq \frac{\pi}{2} .$$

Then use the property that if  $f(x) \leq g(x) \leq h(x)$  for every  $x \in [a, b]$ , then

$$\int_a^b f(x) dx \leq \int_a^b g(x) dx \leq \int_a^b h(x) dx .$$

Be careful when you multiply both sides of an inequality by the same number/expression – if this number/expression is positive, the inequality is preserved; if this number/expression is negative, the inequality is reversed!