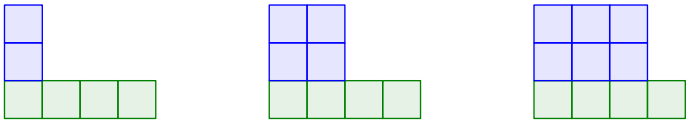
Oppgaver for kapittel 0

0.1.1

Let the number of boxes in the below figures be given by $f(x)$.



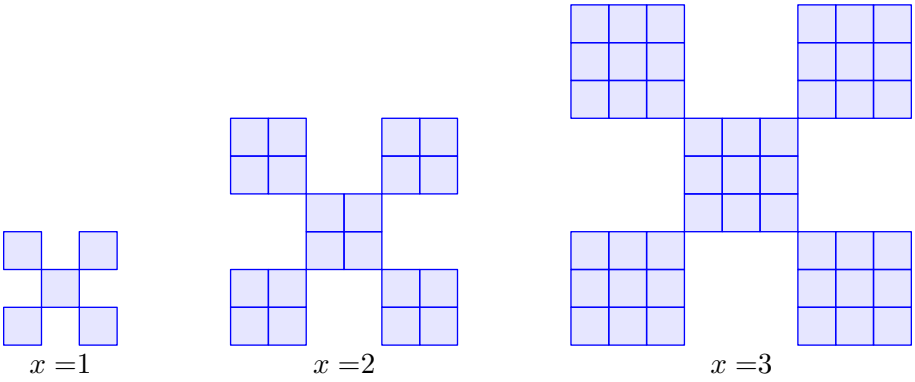
a) Find an expression for $f(x)$.

b) How many boxes are there when $x = 100$?

c) What is x when $f(x) = 24$?

0.1.2

Let the number of boxes in the below figures be given by $a(x)$.



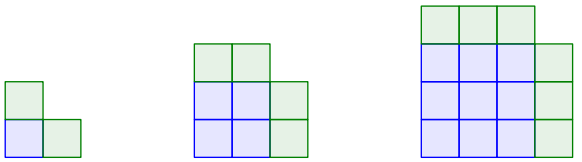
a) Find an expression for $a(x)$.

b) How many boxes are there when $x = 20$?

c) What is x when $a(x) = 405$?

0.1.3

Let the number of boxes in the below figures be given by $b(x)$.



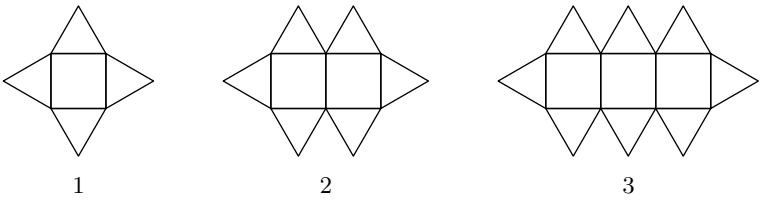
a) Find an expression for $b(x)$.

b) How many boxes are there when $x = 20$?

c) What is x when $b(x) = 80$?

0.1.4 (EGV22D1)

The below figure shows the three first figures of a pattern. The figures are made up by triangles and squares.



How many triangles and how many squares will be present in figure number 10?

0.1.5

Let x be a positive integer.

a) Make a function $p(x)$ yielding the value of the xth positive, even number.

b) Make a function $o(x)$ yielding the value of the xth positive odd number.

0.2.1

Find the slope and the intercept of the function.

a) $f(x) = 5x + 10$ b) $g(x) = 3x - 12$

c) $h(x) = -\frac{1}{7}x - 9$ d) $i(x) = \frac{3}{2}x - \frac{1}{4}$

0.2.2

Draw the function on the interval $x \in [-5, 5]$:

a) $f(x) = 2x - 1$ b) $g(x) = -3x + 5$

0.3.1

Given the equation set

$$x - y = 5 \tag{I}$$

$$x + y = 9 \tag{II}$$

a) Explain why the solutions of this set yield the interception point of the functions

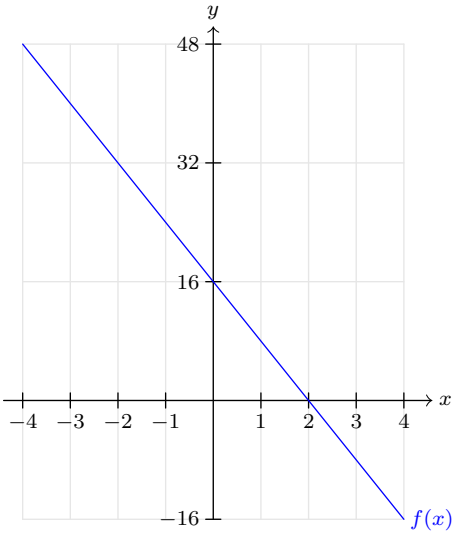
$$f(x) = x - 5$$

$$g(x) = 9 - x$$

b) Solve the equation set.

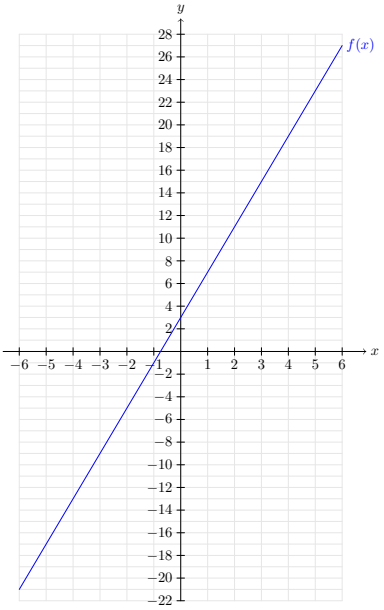
0.3.2

Find the expression of $f(x)$



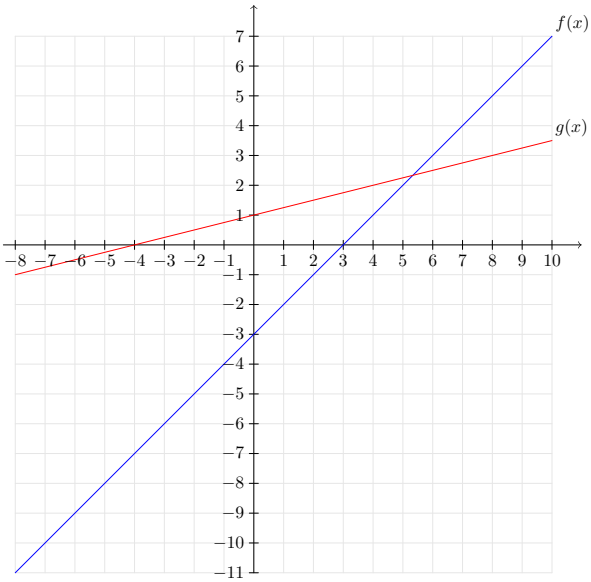
0.3.3

Find the expression of $f(x)$



0.3.4

Find the expression of $f(x)$ and $g(x)$.



Gruble 1

Use the formulas from Exercise 0.1.5 to prove that

a) the sum/difference of two even numbers is an even number.

b) sum/differene of two odd numbers is an even number.

c) the sum/difference of an even number and an odd number is an odd number.

Gruble 2

a) A linear function $f(x)$ has slope 3, and the point $(2, 1)$ lies on the graph of f. Find the expression of f.

b) A linear function $f(x)$ has slope a, and the point (x_1, y_1) lies on the graph of f. Prove that

$$f(x) = a(x - x_1) + y_1$$

(This equation is called the **point-slope equation** .)

Gruble 3

Given the functions $f(x)$ and $g(x)$, where the graph of g is the line passing through $A = (a,f(a))$ and $B = (b, f(b))$. Prove that

$$f - g = f(x) - \frac{f(b) - f(a)}{b - a}(x - a) + f(a)$$