



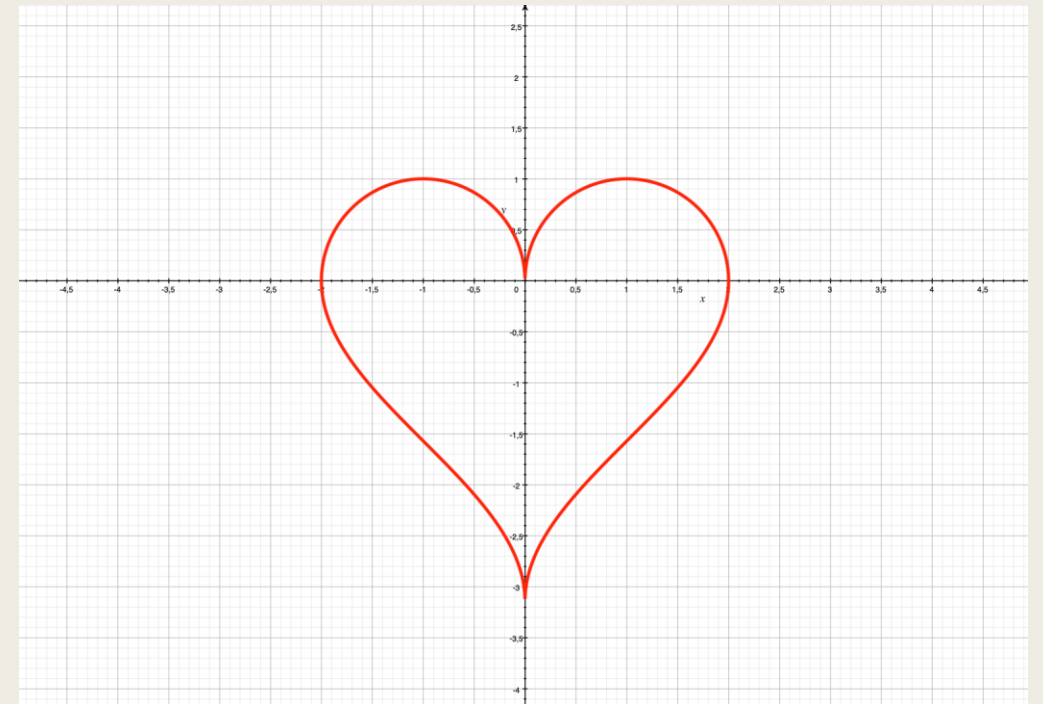
FUNKTIONER OG GRAFER

Dagens tema: Odd one out



Nyt år – nye muligheder

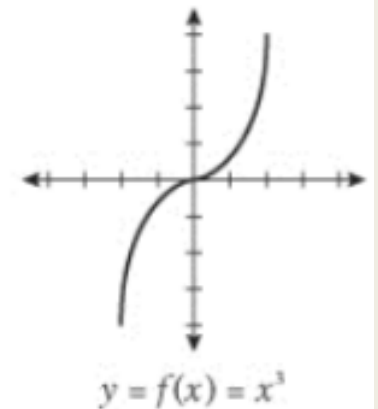
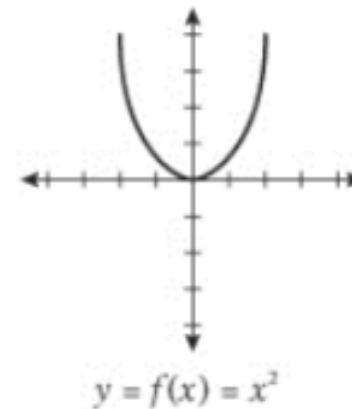
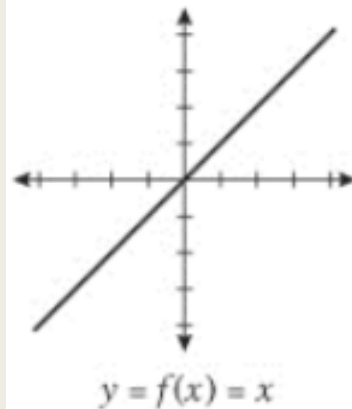
- Vi starter op med et forløb om funktioner og differentialregning.
- Lærebogen vi skal bruge: <https://plushhx3.systime.dk/?id=1977>.



Gruppearbejde:

■ Diskuter:

- Hvilke **typer** funktioner kender I?
- Hvilke **begreber** til at beskrive funktioner kender I?
- Hvad er en funktion?



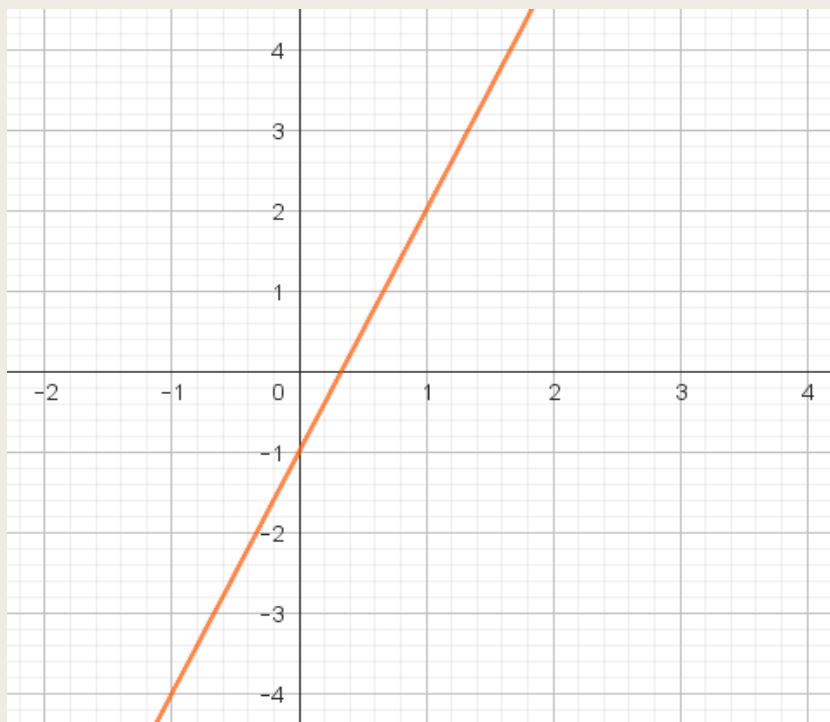
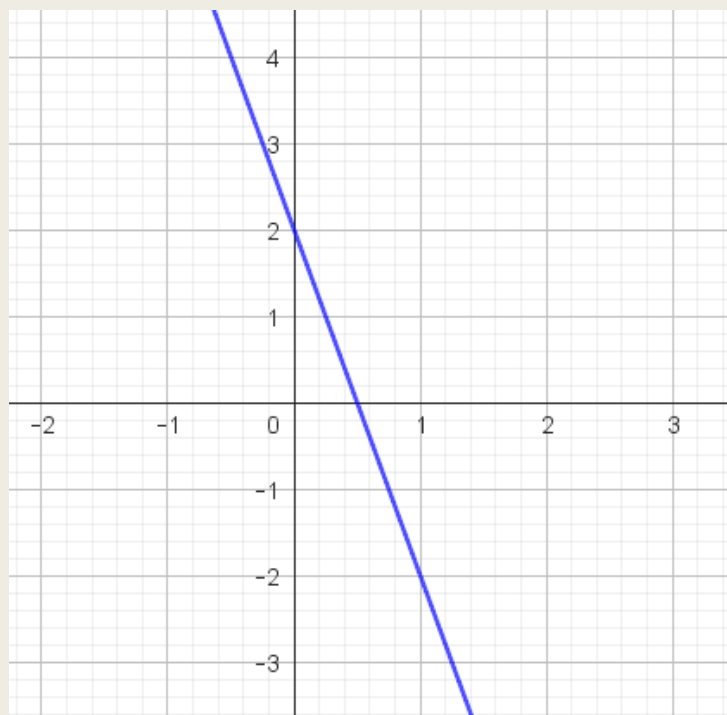
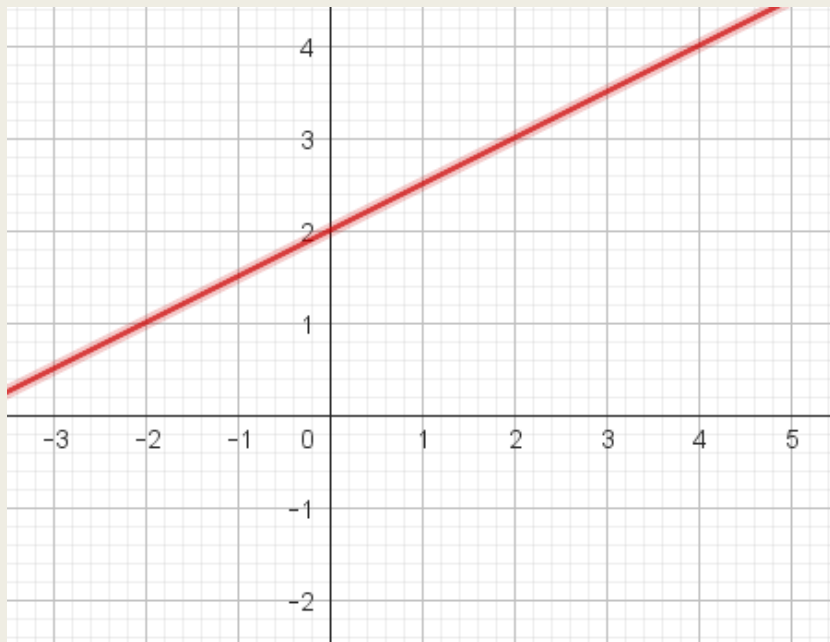
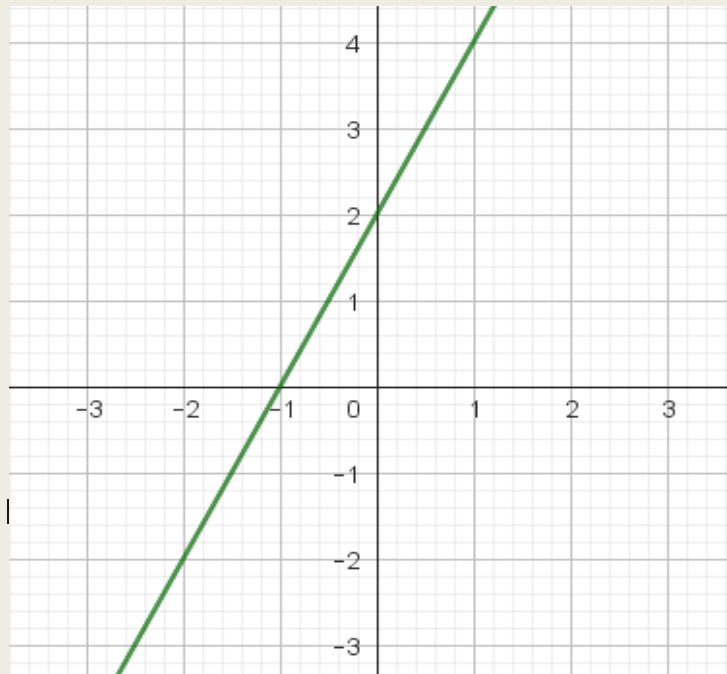
Vigtige begreber til at beskrive en funktion

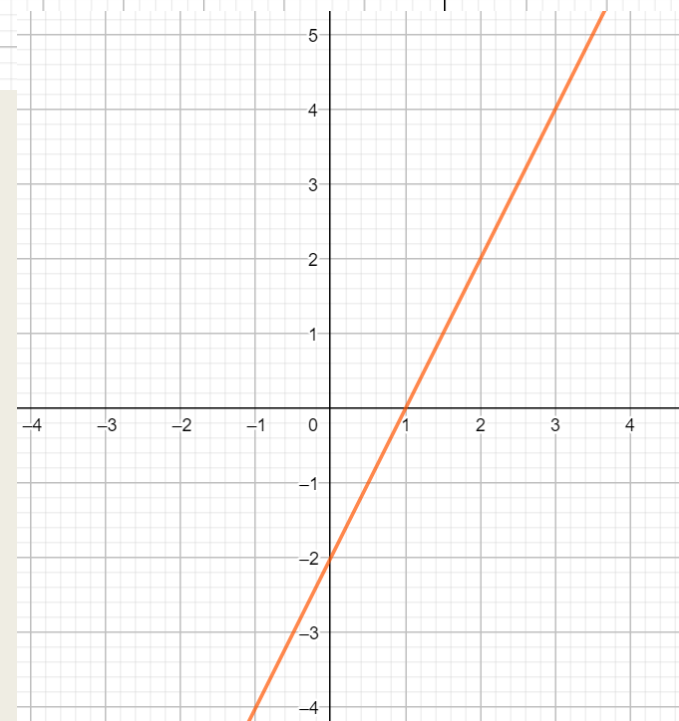
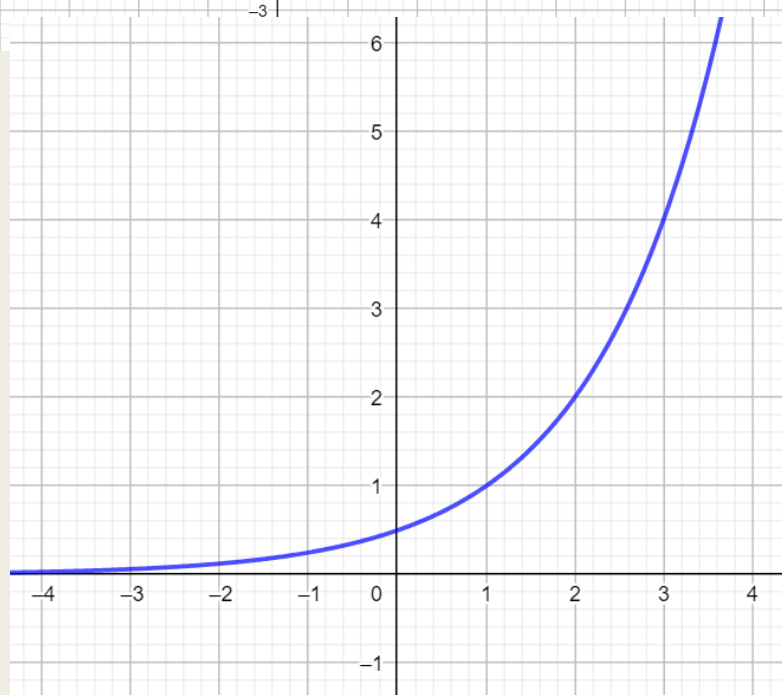
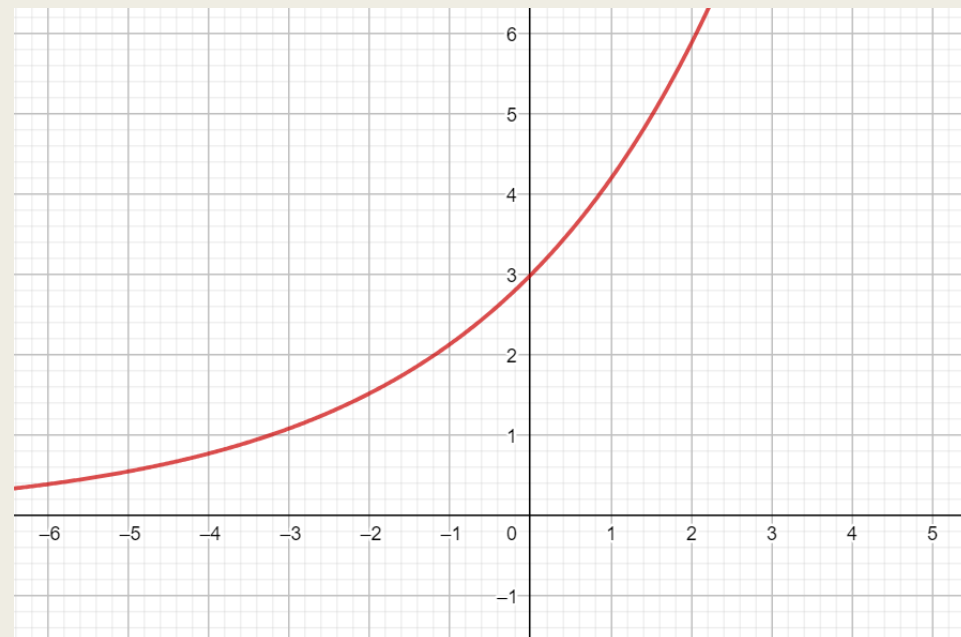
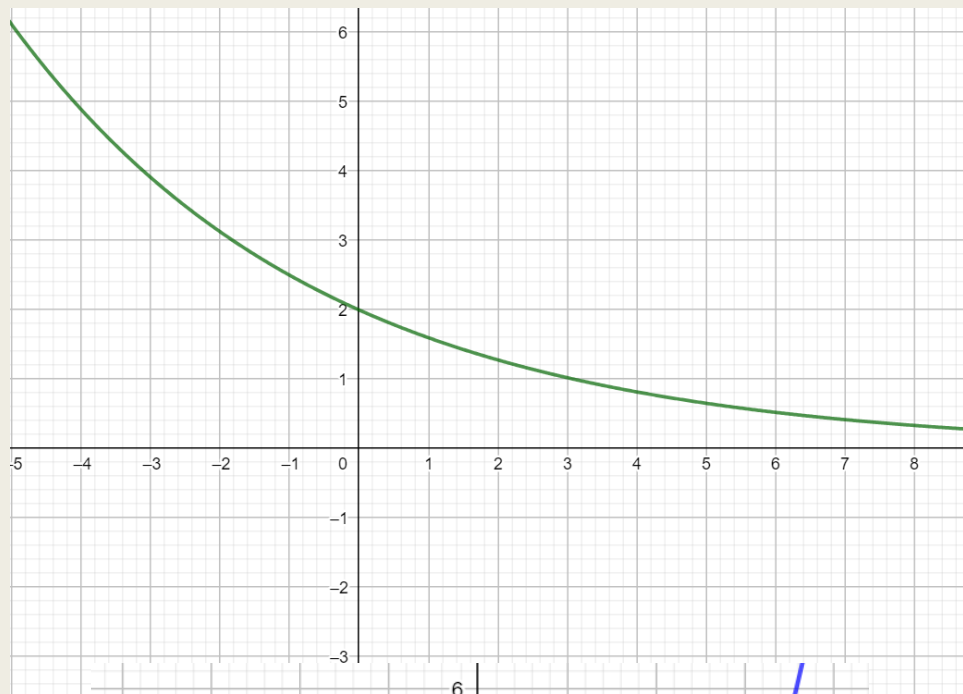
- Voksende og aftagende
- Positiv og negativ
- Konveks og konkav
- Definitionsmængde og værdimængde
- Nulpunkter
- Skæringspunkt med y-aksen.

Odd one out

- Hvilket tal passer ikke ind?

2	3
5	9



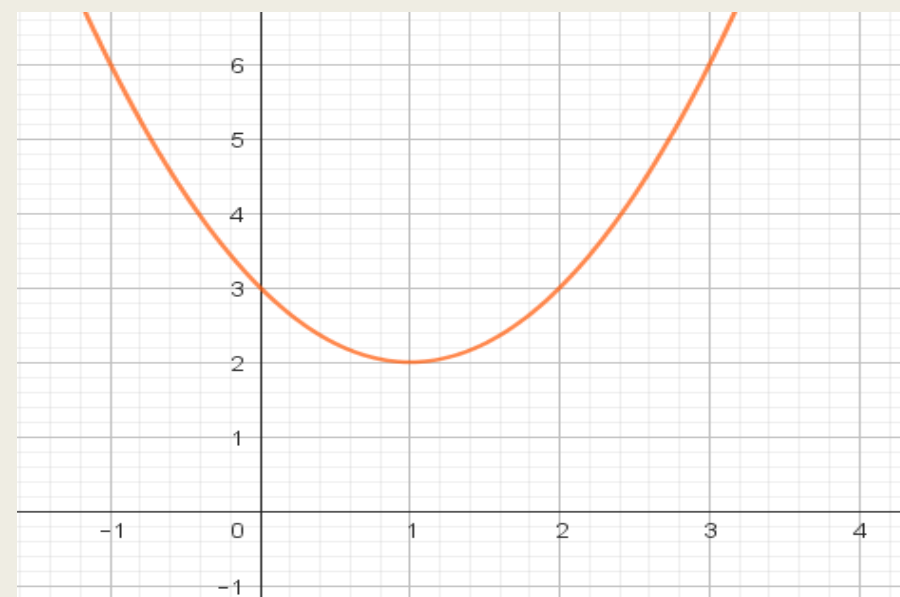
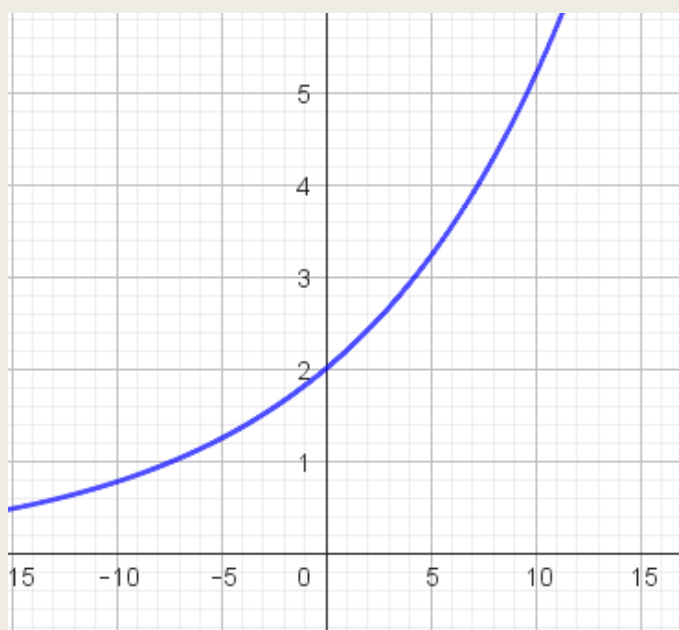
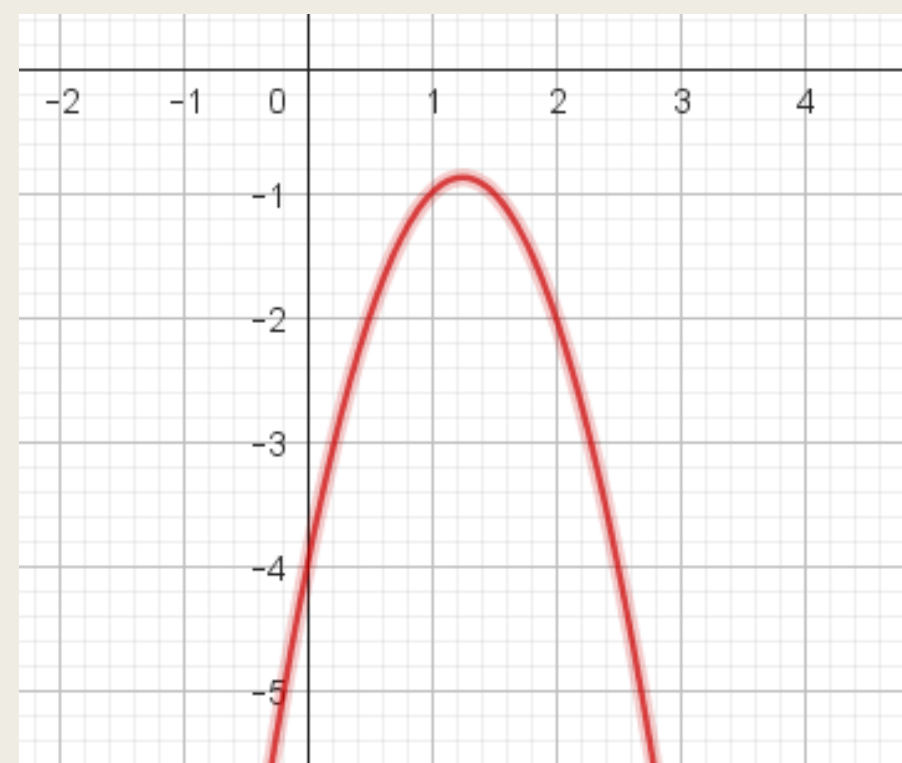
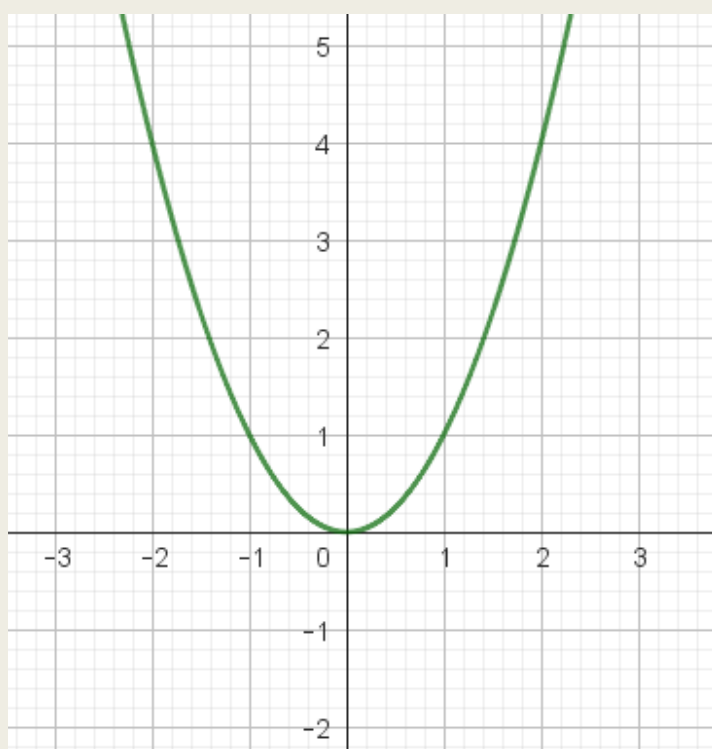


$$f(x) = x^2$$

$$f(x) = 4x^2 + 2x$$

$$f(x) = -x$$

$$f(x) = -x^2 + 4x - 4$$



X	Y
0	8
1	11
2	14
3	17
4	20

X	Y
0	8
1	7
2	6
3	5
4	4

X	Y
-2	2
-1	4
0	8
1	16
2	36

X	Y
0	4
1	13
2	22
3	31
4	40

$$f(x) = 10 * 0.8^x$$

$$f(x) = \ln(x)$$

$$f(x) = 4x + 9$$
$$0 \leq x$$

$$f(x) = \sqrt{x}$$

Individuel øvelse

- For hver egenskab skal i skrive op forskriften til en funktion som opfylder den:
 - 1) *Voksende*
 - 2) *Aftagende*
 - 3) *Skærer y-aksen i $(0,5)$*
 - 4) *Er positiv over det hele.*
 - 5) *Har et nulpunkt i $(3,0)$.*

Differentialregning kommer ind i billedet!

Hvordan differentierer man de forskellige typer af funktioner som I kender?

Funktion f	Afledet funktion f'
$f(x) = k$	$f'(x) = 0$
$f(x) = a \cdot x + b$	$f'(x) = a$
$f(x) = x^2$	$f'(x) = 2x$
$f(x) = x^n$	$f'(x) = n \cdot x^{n-1}$
$f(x) = \sqrt{x}$	$f'(x) = \frac{1}{2\sqrt{x}}$
$f(x) = \frac{1}{x}$	$f'(x) = -\frac{1}{x^2}$
$f(x) = e^x$	$f'(x) = e^x$
$f(x) = e^{kx}$	$f'(x) = ke^{kx}$
$f(x) = a^x$	$f'(x) = \ln(a) \cdot a^x$
$f(x) = \ln(x)$	$f'(x) = \frac{1}{x}$