



Digital tools in Math- and Physicstudies

Math

- Microsoft Excel
- Geogebra
- Smartboard



Compact living

Cooperation project – Technology course/Math

- Loan for the apartment and for example furniture
- Savings

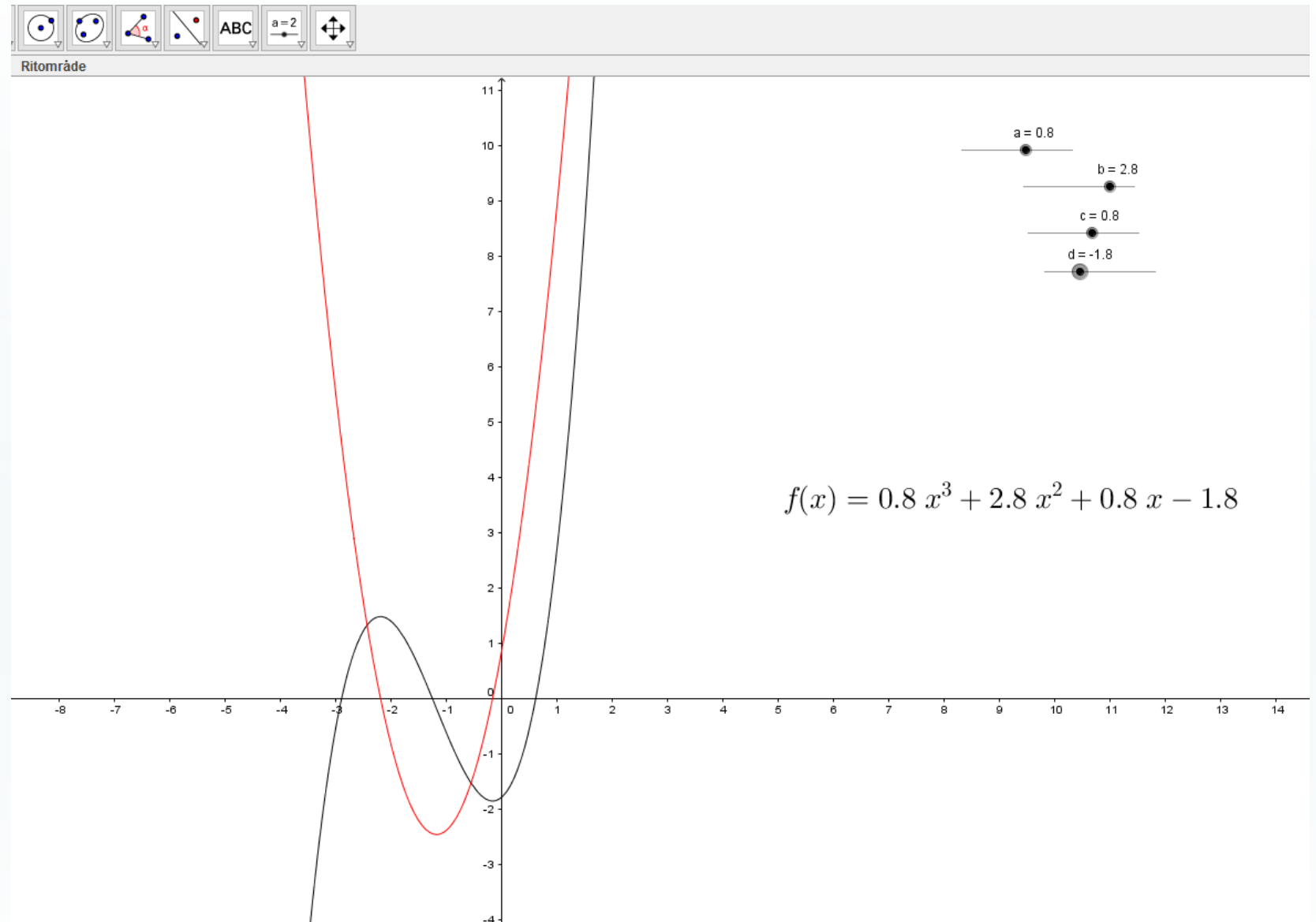


Microsoft Excel

Loan	700 000 kr				
Interest rate	5%				
Year	Detailed debt	Interest rate per year	Amortization	Payment	Outgoing debt
1	700000	35000	12000	47000	688000
2	688000	34400	12000	46400	676000
3	676000	33800	12000	45800	664000
4	664000	33200	12000	45200	652000
5	652000	32600	12000	44600	640000
6	640000	32000	12000	44000	628000
7	628000	31400	12000	43400	616000
8	616000	30800	12000	42800	604000
9	604000	30200	12000	42200	592000
10	592000	29600	12000	41600	580000
11	580000	29000	12000	41000	568000
12	568000	28400	12000	40400	556000
13	556000	27800	12000	39800	544000
14	544000	27200	12000	39200	532000
15	532000	26600	12000	38600	520000
16	520000	26000	12000	38000	508000
17	508000	25400	12000	37400	496000
18	496000	24800	12000	36800	484000
19	484000	24200	12000	36200	472000
20	472000	23600	12000	35600	460000



Geogebra



Smartboard

Saving the lectures (and more...)

Arkiv Redigera Visa Infoga Format Verktyg Tilläggsprogram Hjälp



Derivat av exponentielfunktioner

$$f(x) = a^x$$

$$f'(x) = ?$$

$$f(x) = 10^x = (e^{\ln 10})^x = e^{\ln 10 \cdot x}$$

$$f'(x) = \ln 10 \cdot e^{\ln 10 \cdot x} = \ln 10 \cdot 10^x$$

Anteckningar

$$10 = e^{\ln 10}$$

$$\Rightarrow 10^x = (e^{\ln 10})^x$$

$$e^{\ln 10 \cdot x} = (e^{\ln 10})^x = 10^x$$

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

$$f'(x) = \ln 2 \cdot 2^x$$

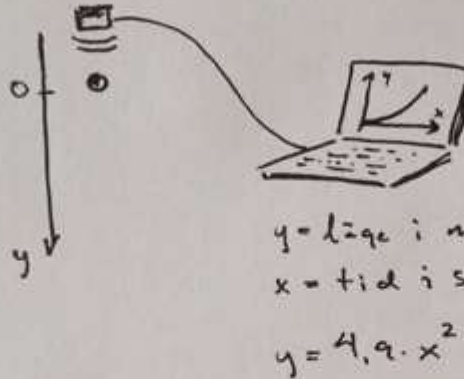
Youtube

Supplement with lectures on Youtube
added on Vklass learning platform

"Flipped classroom"



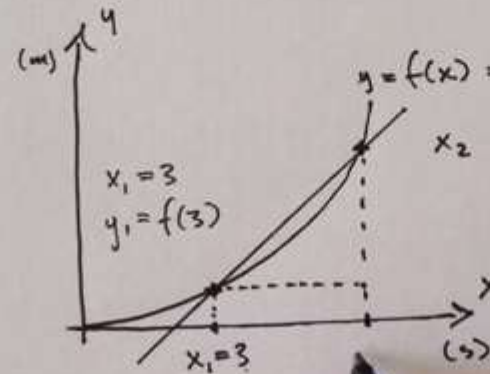
Derivatus definition



Derivate

- * Förändrings hastighet
- * Kurvans lutning
- * Tangentens lutning

Vilken hastighet har
stenen vid $x = 3$ s?



Sekantens lutning

$$k = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

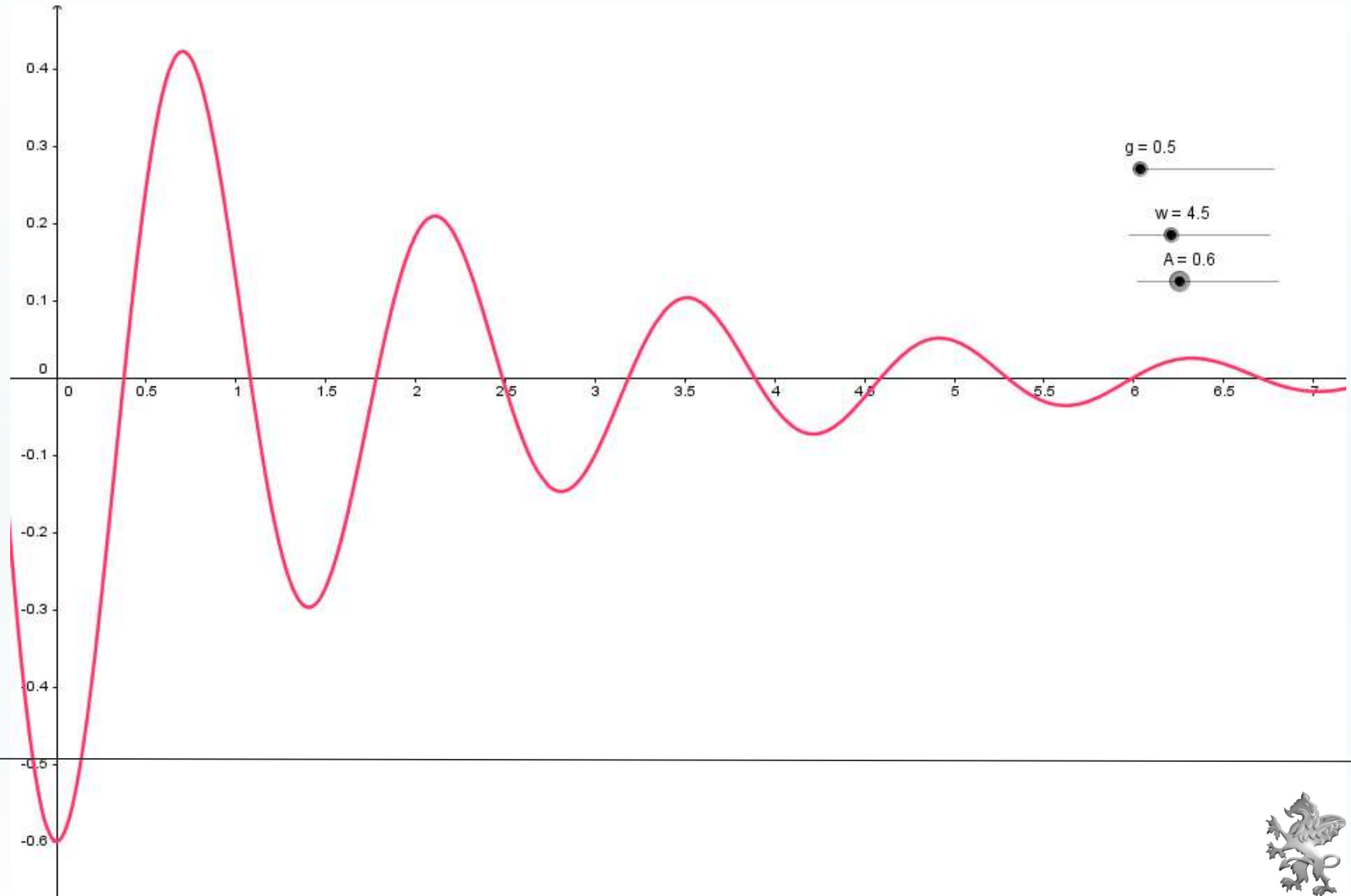


Physics

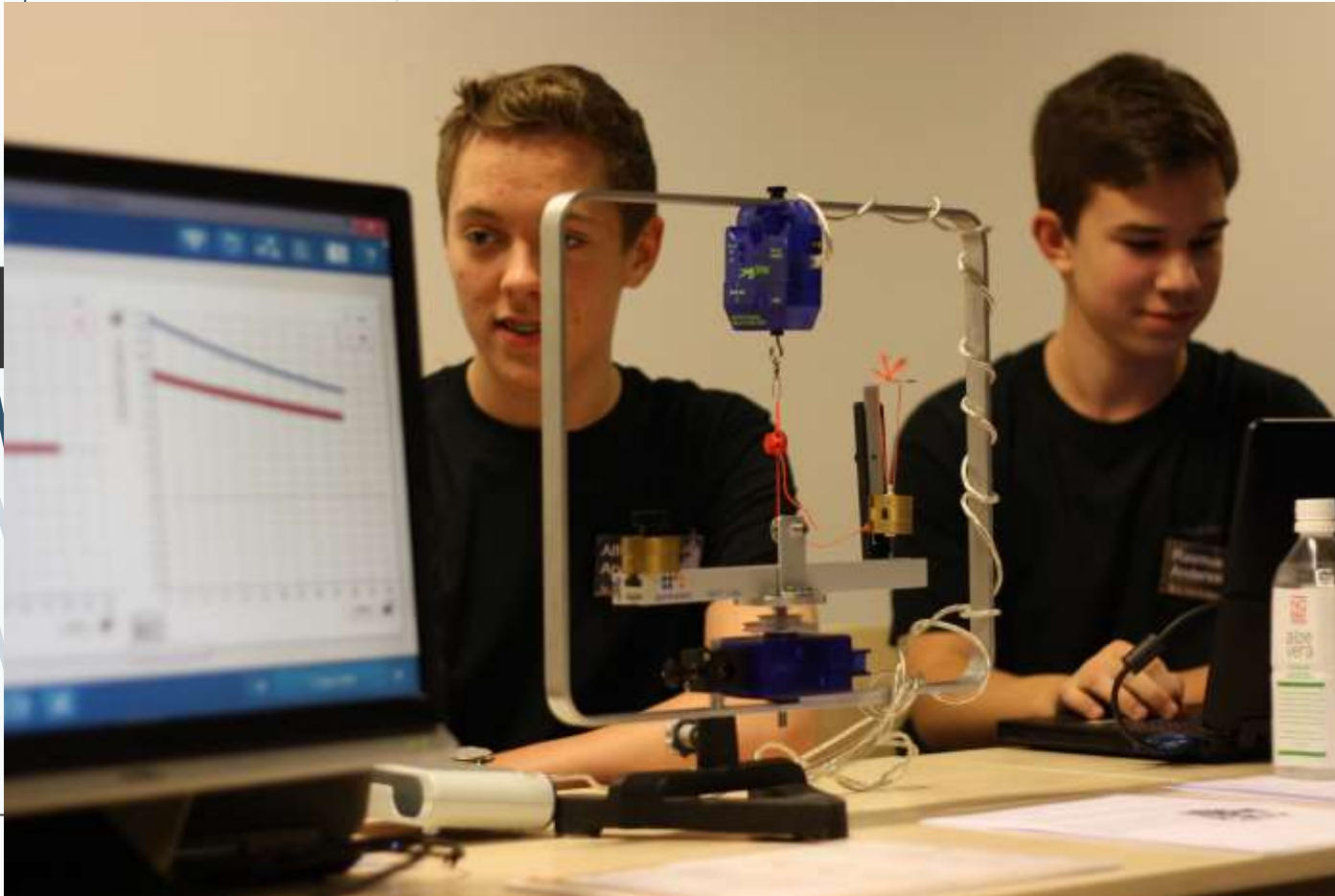
Pasco with Sparkvue

Microsoft Excel

Geogebra



Pasco



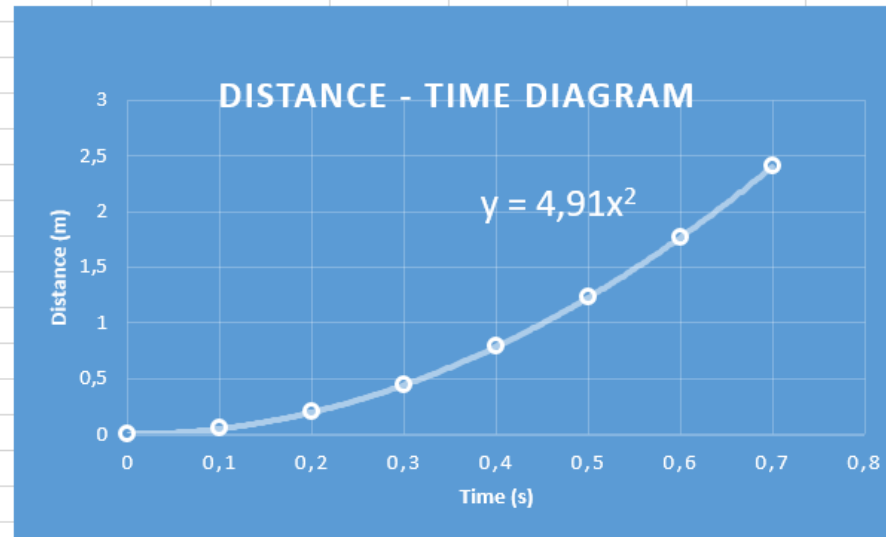
- Data logging
- Example of Sensors
- Force
 - Motion
 - Temperature



The Golfball

Early project in the physics course

Time (s)	Distance (m)	Speed (m/s)	Acceleration (m/s ²)
0	0		
0,1	0,0491	0,491	
0,2	0,1964	1,473	9,82
0,3	0,4419	2,455	9,82
0,4	0,7856	3,437	9,82
0,5	1,2275	4,419	9,82
0,6	1,7676	5,401	9,82
0,7	2,4059	6,383	9,82



Trajectory with air resistance

