

Combining the strengths of
STACK and GeoGebra
for school and academic mathematics

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www.pinkernell.online

AuthOMath (2022-2024)

Authoring Online Material with
Multimodal, Dynamic
and Interactive Applets
and Automated Feedback
for Learning Math

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Geogebra GmbH (associated)



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1. strengths of GeoGebra and STACK
2. objectives of AuthOMath
3. didactical gains from technical advances

strengths

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STACK

- randomised questions
- differentiated feedback
based on automatic answer analysis
- highly adaptable
(for experienced in coding)
- large academic community

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GeoGebra

- multimodal, dynamic, and interactive information
- pad for creating (defining, sketching, ...) mathematical objects
- highly accessible (for noncoders)
- large school community

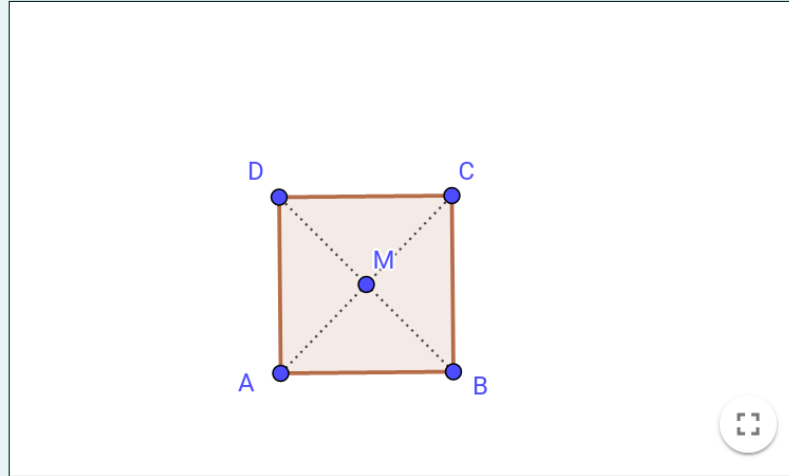
strengths combined

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Question a (2 Punkte)

Change the appearance of this quadrangle ABCD.



Name all particular quadrangles
to which ABCD can be changed .

So what type of quadrangle is ABCD?

strengths combined

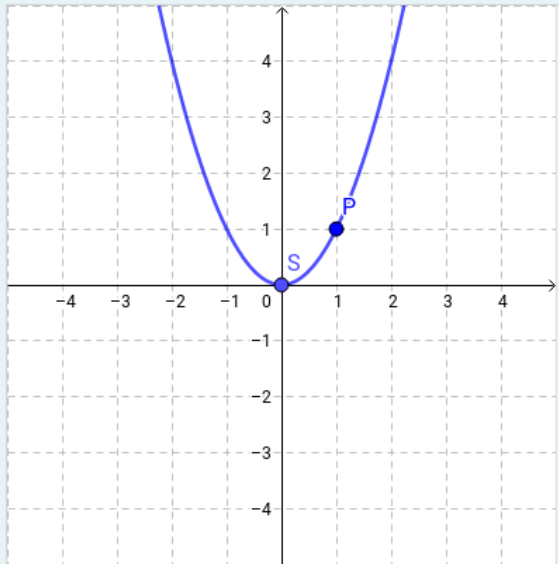
(with thanks to Tim Lutz for technical help)

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strengths combined

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Move the points S und P,
such that the graph fits with
 $f(x) = -3 \cdot (x + 1)^2 - 2$.

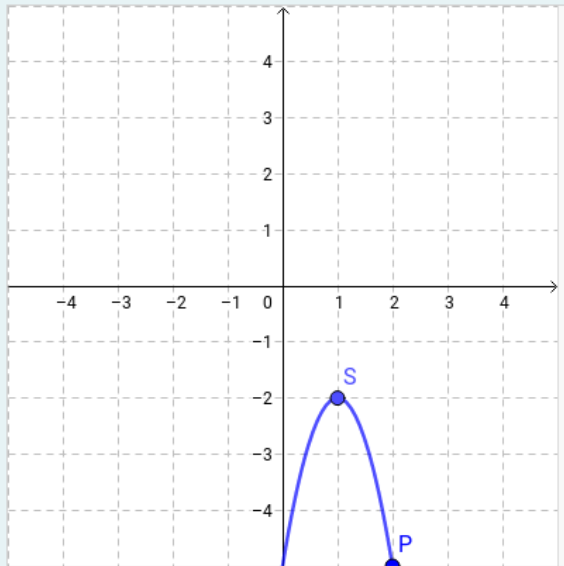


Check

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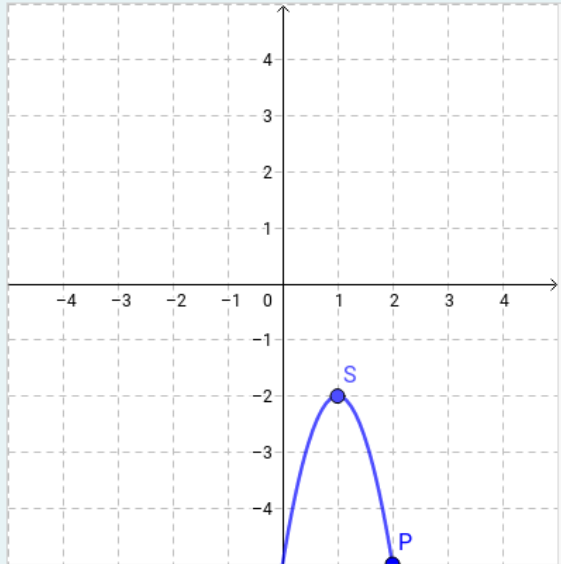


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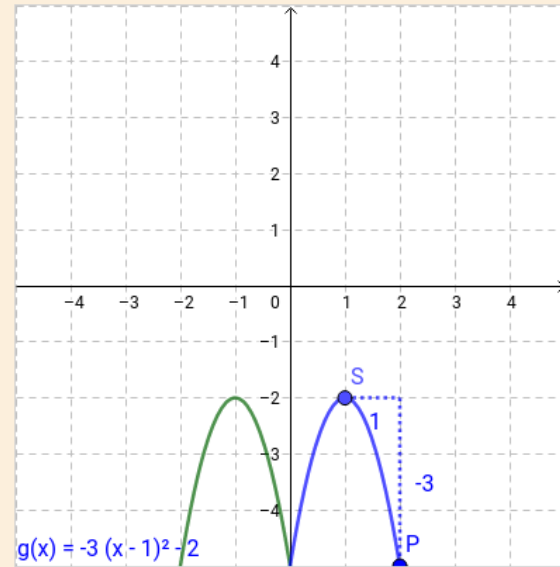
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Check

Wrong, too bad!

The green graph would be correct.



Why?

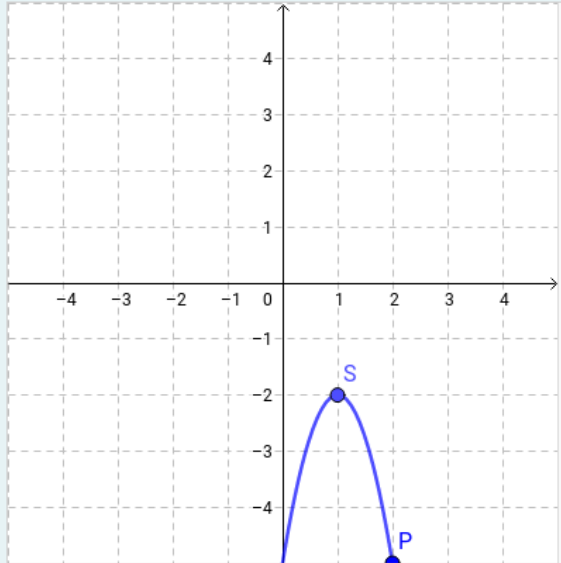
You can find out yourself.

Correct your blue graph
and watch how the expression changes.

strengths combined

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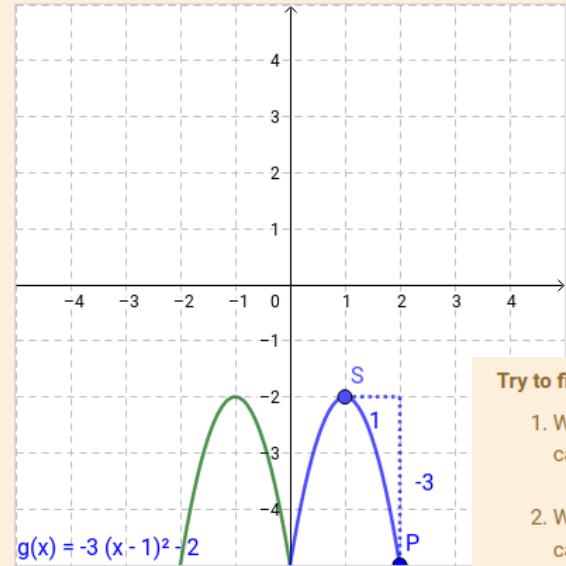
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Why?

You can find out yourself.

Correct your blue graph
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Try to find answers to the following questions:

1. Where in the expression
can you see the coordinates of the vertex?
2. Where in the expression
can you see a value for the opening
of the parabola?

Do you have an idea already?

Then try the task again.

Or wait 30 seconds
after which a full solution will appear:

Musterlösung

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objectives

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AuTo

- a moodle based authoring tool for randomized interactive and dynamic multimodal mathematical tasks with automatic adaptive feedback

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DiCo

- a didactical concept for designing online based interactive learning material for use in mathematics teacher education

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DiCo:

turning (pre-service) teachers' attention towards

- task variation:
same learning object – different approaches
- diagnosis of the pupils'
potentials and difficulties
- feedback culture
and content

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turning teacher (students) attention towards

- task variation: same learning object – different approaches
- diagnosis of the pupils' potentials and difficulties
- feedback culture and content
- didactical functions of form and elements of a digital task

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