

Fach: Mathematik
 Sprache: Englisch
 Klasse: 12

Zeit	Phase	Inhalt	Verhalten der Lehrkraft/Verhalten der SuS	Arbeits-/Sozialform	Medien
10:45 – 10:46	Begrüßung	Begrüßung der SuS	<p>L: <i>“Good morning, everybody. My name is ... and we are going to do this math lesson together.”</i></p> <p>SuS: <i>“Good morning!”</i></p>	Plenum	Interaktives Whiteboard PPP
10:46 – 10:55	Einstieg	Kurze Partnerdiskussion der SuS, Vokabeleinführung zu Hochpunkten und Tiefpunkten	<p>L: <i>“We want to start this lesson with a little partner discussion. On the slides you can see three questions and I want you to discuss these questions with a partner for about 3 minutes. Try to use as much English as possible and feel free to ask me if there are any words that you do not know in English!”</i></p> <p>SuS: Diskutieren die Fragen mit ihrem Partner/ihrer Partnerin, möglichst in englischer Sprache, wobei deutsche Vokabeln auch akzeptiert werden.</p> <p>L: <i>“Thank you for the short warm up! Now that you have refreshed your knowledge about tangents and their meaning in the context of functions, I want to show you how you can use tangents to characterize important points of functions. But before doing that, we need to have a look at a few new words that you need in order to be able to talk about this issue.”</i></p> <p>L: Schaltet auf die Folie mit den neuen Vokabeln, liest die Aufgabe vor und ruft nacheinander verschiedene SuS auf, die Wörter mit den entsprechenden Definitionen und Übersetzungen zu verbinden.</p> <p>SuS: Ordnen den Wörtern die Definitionen und Übersetzungen zu.</p> <p>L: <i>„Very well done. You can find the words, their definitions, and the translations on the worksheet „Vocabulary help – derivatives” that Mrs. ... gave to you in the last lesson. Please use this worksheet when working on the later tasks.”</i></p>	Partnerarbeit Plenum	Interaktives Whiteboard PPP AB „Vocabulary help – derivatives“
10:55 –	Erarbeitungsphase	Erarbeitung des Zusammenhangs	<p>L: <i>“As I told you earlier, today we want to talk about the meaning of tangents in the context of important points of functions. You</i></p>	Einzelarbeit	Interaktives Whiteboard

11:10		zwischen Ableitungsfunktion und Funktion bei Hochpunkten und Tiefpunkten	<p><i>will see that tangents not only help us to say where a function monotonically increases or decreases, but where it has minima and maxima as well. Therefore, I prepared a worksheet for you so that you can find out what tangents tell us about maxima and minima."</i></p> <p>L: Schaltet auf die nächste Folie mit den Aufgaben um und teilt das AB „Minima and Maxima of functions“ aus.</p> <p>L: „X, please read out task 1 for us.“</p> <p>X: Reads out task 1.</p> <p>L: “Are there any questions about the task or are there any words that you do not know?”</p> <p>SuS: Stellen ihre Fragen.</p> <p>L: Beantwortet die Fragen und greift dabei, wenn nötig, auf die deutsche Sprache zurück, um sicherzustellen, dass alle SuS die Aufgabe verstanden haben. Außerdem kann die Aufgabenstellung gegebenenfalls in einfacheren Worten noch einmal erklärt werden.</p> <p>L: “Alright, then you now have about 13 minutes to work on task 1. For those of you who are unsure about how to determine the slope of a tangent, I prepared a short reminder how to do it. Feel free to ask me any questions you might have!”</p> <p>SuS: Bearbeiten die Aufgabe 1 und stellen bei Problemen Fragen.</p> <p>L: Läuft umher, beobachtet den Arbeitsprozess und gibt Hilfestellungen, in deutscher und englischer Sprache.</p>		PPP AB „Minima and Maxima of functions“
11:10 – 11:16	Sicherung	Besprechen der Ergebnisse aus der Erarbeitungsphase, Abschreiben des Merksatzes	<p>L: “The time is up now. We want to compare your results. Y, would you please tell us which points you chose, and which slopes you determined for the tangents? For the others: Please remember that all of you choose different points and therefore your results can differ from what Y will say.”</p>	Plenum	Interaktives Whiteboard PPP AB „Minima and Maxima of functions“

			<p>Y: Erklärt, welche Punkte er/sie gewählt hat und welche Anstiege er ermitteln konnte.</p> <p>L: „Thank you! On the slide you can see which points I chose, but yours are of course correct as well. Z, could you please tell us which graph you drew in task c)?”</p> <p>Z: Beschreibt, dass er/sie eine Parabel gezeichnet hat, die ihre Nullstellen bei 1 und 3 hat.</p> <p>L: „That´s correct. Here on the slide, you can see the graph of f' once again. And now we come to the most important question: What can you say about the connection between f and f' and what does f' tell you about the flight of the hot-air balloon?”</p> <p>A: “We can see that where the slope of the tangent is 0/where the zeros of the derivative f' are located, the function f has either a minimum or a maximum. So that means for the hot-air balloon that it has reached one of its highest points after 1 hour and one of its lowest points after 3 hours.”</p> <p>L: “Very good answer! The derivative f' characterizes where function f has minima or maxima. We want to write down these findings in the grey box on the top of your worksheet. So please take out a pen and write down what is written in the red box on the slide.”</p> <p>SuS: Schreiben den Merksatz auf ihr AB.</p>		
11:17 – 11:29	Transferphase	Lösen der Aufgaben zu Hochpunkten und Tiefpunkten von Funktionen	<p>L: „Now that you are aware of the connection between f and f', you need to practice what you have just learned. Therefore, please turn your worksheet over and try to solve task 2 and task 3. Task 2 is a mandatory task that should be solved by everyone and task 3 is an additional task that you can work on once you have finished task 2. Behind the board you can find the solutions for both tasks, so make sure to check your answers before you start the next task. You have about 12 minutes to solve the tasks. If there should occur any problems, please feel</p>	Partnerarbeit/ Einzelarbeit	Interaktives Whiteboard PPP AB „Minima and Maxima of functions” Lösungen

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			<p><i>free to ask me. If you want to, you can work together with a partner, but please make sure to use as much English as possible while discussing.”</i></p> <p>SuS: Bearbeiten die Aufgaben allein oder zu zweit und kontrollieren ihre Aufgaben selbstständig.</p> <p>L: Geht herum und gibt Hilfestellungen, in englischer und deutscher Sprache.</p> <p>L: „<i>There is one more minute left. Please come to an end and make sure to check your answers!</i>”</p>		
11:29 - 11:30	Verabschiedung	Verabschiedung der SuS	<p>L: „<i>Thank you very much for your participation and your motivation to talk as much English as possible! I hope you enjoyed the lesson as much as I did. Goodbye!</i></p> <p>SuS: “Bye.”</p>	Plenum	