To the student - Information about the oral part

You will be given a problem that you will solve in writing, and then you will present your solution orally. If you need, you can ask your classmates, your teacher and your textbook for help when solving the problem. Your oral presentation starts with you presenting what the problem is about and then you describe and explain your solution. You must present all steps in your solution. However, if you have done the same calculation several times (for example in a table) it might be sufficient if you present some of the calculations. Your presentation should take a maximum of 5 minutes, and be held to a smaller group of your classmates and one or more teachers.

The problem given to you should, on the whole, be solved algebraically. You might need a calculator to do some of the calculations but, when presenting your solution, you should avoid referring to the use of your calculator for drawing graphs and/or symbolic handling (if that is the type of calculator you are using).

When assessing your oral presentation, the teacher will take into consideration:
- how complete, relevant and structured your presentation is,
- how well you describe and explain the train of thought behind your solution,
- how well you use the mathematical terminology.

How complete, relevant and structured your presentation is
Your presentation must contain the necessary parts in order for a listener to follow and understand your thoughts. What you say should be in a suitable order and be relevant. The listener must understand how calculations, descriptions, explanations and conclusions are connected with each other.

How well you describe and explain the train of thought behind your solution
Your presentation should contain both descriptions and explanations. To put it simple, a description answers the question *how* and an explanation answers the question *why*. You describe something when you for instance tell *how* you have done a calculation. You explain something when you for instance justify *why* you could use a certain formula.

How well you use the mathematical terminology
In your presentation you should use a language that contains mathematical terms, expressions and symbols, suitable for the problem you have solved.

Mathematical terms are for example words like "exponent", "function" and "graph".

An example of a mathematical expression is that x^2 is read "x to the power 2" or "x squared".

Some examples of mathematical symbols are π and $f(x)$, which are read "pi" and "f of x".
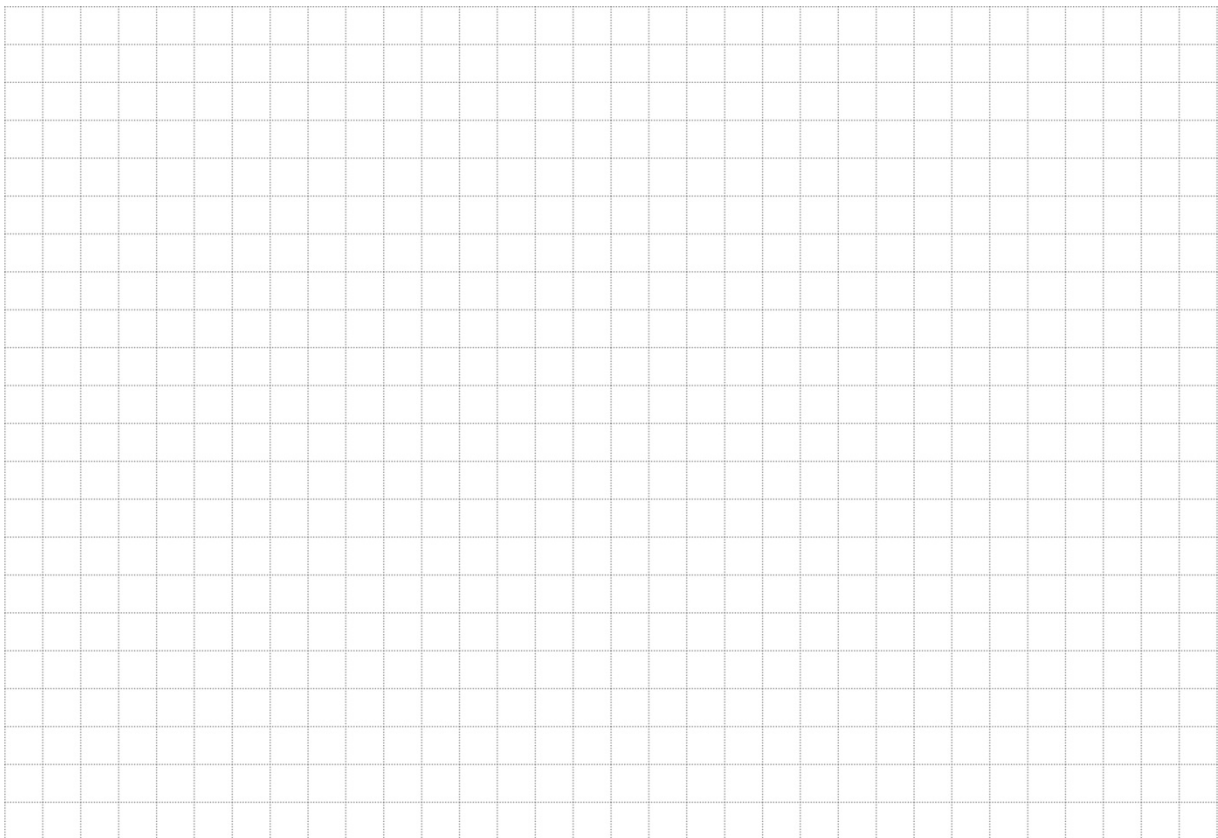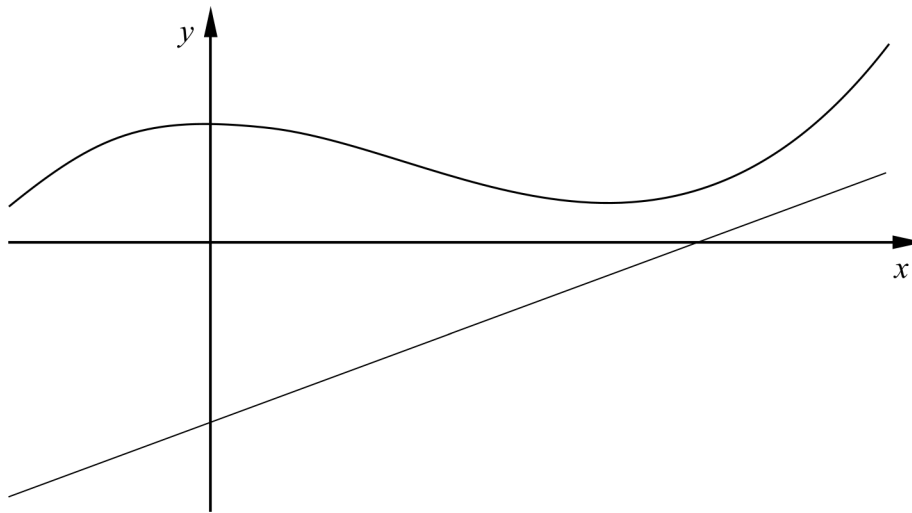
Problem 1.

Name:_____

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Find the shortest distance in the y-direction between the graphs of the functions f and g where $f(x) = 2x^3 - 6x^2 + 12$ and $g(x) = 7.5x - 18$ and $x > 0$
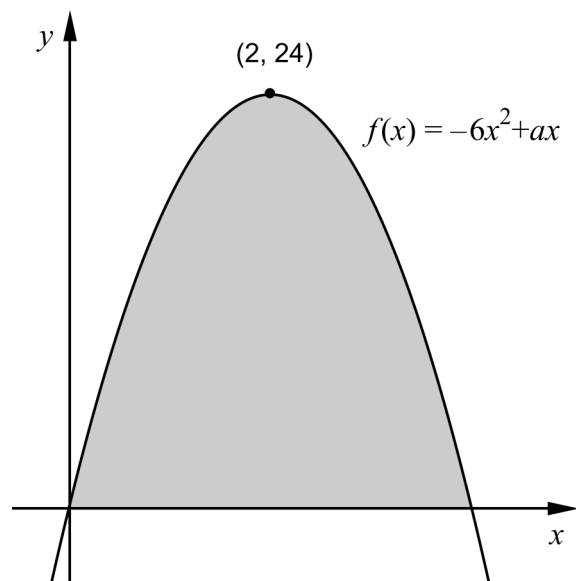
Problem 2.

Name:_____

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The function f is given as $f(x) = -6x^2 + ax$ where a is a constant. The graph of the function f has a maximum point (2, 24), see the figure.

Find the area of the shaded region which is enclosed by the graph of the function $f(x) = -6x^2 + ax$ and the x-axis.

Problem 3.

Name:_____

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In this problem you are going to investigate the function $v = 3x + y$

The two variables x and y satisfy the following conditions:

$$\begin{cases} 2x + y \geq 14 \\ x + 2y \leq 16 \\ y \geq 2 \end{cases}$$

Find the largest and the smallest value of the function $v = 3x + y$

Problem 4.

Name:_____

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The figure shows the curve $y = 2x^3 - 4x^2 - 3x + 9$ and the tangent to the curve at the point P where $x = 0$. This tangent cuts the curve at another point Q.
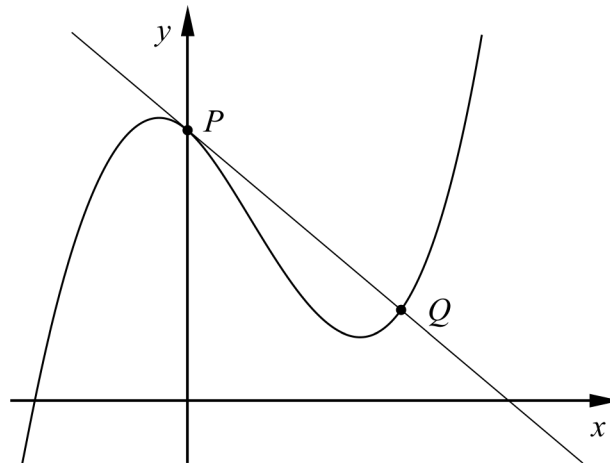
Find the coordinates of the point Q.

Bedömningsmatris för bedömning av muntlig kommunikativ förmåga

Kommunikativ förmåga	E	C	A	Max
Fullständighet, relevans och struktur Hur fullständig, relevant och strukturerad elevens redovisning är.	Redovisningen kan sakna något steg eller innehålla något ovidkommande. Det finns en övergripande struktur men redovisningen kan bitvis vara fragmentarisk eller rörig. (1/0/0)		Redovisningen är fullständig och endast relevanta delar ingår. Redovisningen är välstrukturerad. (1/0/1)	(1/0/1)
Beskrivningar och förklaringar Förekomst av och utförlighet i beskrivningar och förklaringar.	Någon förklaring förekommer men tyngdpunkten i redovisningen ligger på beskrivningar. Utförligheten i de beskrivningar och de förklaringar som framförs kan vara begränsad. (1/0/0)		Redovisningen innehåller tillräckligt med utförliga beskrivningar och förklaringar. (1/0/1)	(1/0/1)
Matematisk terminologi Hur väl eleven använder matematiska termer, symboler och konventioner.	Eleven använder matematisk terminologi med rätt betydelse vid enstaka tillfällen i redovisningen. (1/0/0)	Eleven använder matematisk terminologi med rätt betydelse och vid lämpliga tillfällen genom delar av redovisningen. (1/1/0)	Eleven använder matematisk terminologi med rätt betydelse och vid lämpliga tillfällen genom hela redovisningen. (1/1/1)	(1/1/1)
Summa				(3/1/3)