

FINITE ELEMENTS APPROXIMATION

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What is finite element approximation? The FEM is such an approximation method that subdivides a complex space or domain into a number of small, countable, and finite amount of pieces (thus the name finite elements) whose behaviour can be described with comparatively simple equations.

Why is FEM an approximate solution? The method approximates the unknown function over the domain. The simple equations that model these finite elements are then assembled into a larger system of equations that models the entire problem. The FEM then approximates a solution by minimizing an associated error function via the calculus of variations.

What is the polynomial approximation in the finite element method? The polynomial approximation in the finite element method? In the analysis of a finite element method (FEM) we can describe the shape of a given element by a set of elementary functions known as shape functions. The approaches describing these functions are quite different ones.

What is the method of external finite element approximation? External approximations are a generalization of Finite Element Method (FEM) in terms that: Absolutely arbitrary geometrical shapes can be used as “finite elements”. Basis functions which approximate the field of interest in the “element” can be of arbitrary class and are independent of the “element” shape.

What is the difference between FEA and FEM? Engineers use FEM when they need to develop an adoptable design that's practical but not necessarily perfect for a particular application. FEA: The mathematical equations behind FEM are applied to create a simulation, or what's known as a finite element analysis (FEA).

What is the difference between FEM FDM and FVM? FEM: FEM naturally conserves mass, momentum, and energy due to its variational formulation. FDM: FDM can directly handle conservation laws by discretizing the derivatives in the governing equations. FVM: FVM is inherently conservative as it integrates the governing equations over control volumes, ensuring conservation.

Why do we need approximate solutions? Sometimes it is difficult to solve an equation exactly. However, an approximate solution may be accurate enough for solving the considered equation. In this chapter, a general strategy is recommended to solve variety of linear and nonlinear ordinary differential equations (ODEs) with boundary value conditions.

What is approximation solution? Approximating Solutions, also called Trial and Error, or Trial and Improvement, is used for calculating values when an equation cannot be solved using another method. The process involves estimating a start value, deriving the answer from the equation, and then improving the next estimate.

What is the concept of FEM? The finite element method is a systematic way to convert the functions in an infinite dimensional function space to first functions in a finite dimensional function space and then finally ordinary vectors (in a vector space) that are tractable with numerical methods.

What is a finite approximation method? The finite difference approximations for derivatives are one of the simplest and of the oldest methods to solve differential equations. It was already known by L. Euler (1707-1783) ca. 1768, in one dimension of space and was probably extended to dimension two by C.

What is finite difference approximation based on? The finite difference method relies on discretizing a function on a grid. To use a finite difference method to approximate the solution to a problem, one must first discretize the problem's domain. This is usually done by dividing the domain into a uniform grid (see image).

What is polynomial approximation? You can approximate any (reasonably nice) function by a polynomial. Taylor polynomials are one way to find such polynomial approximations. Pushing the idea of Taylor polynomials "to infinity", we'll eventually get Taylor series.

Why finite element method is an approximate solution? It depends of many factors: accuracy in the material properties used, if loadings & boundary conditions prescribed in your FE model are correct, if meshing approach used is reasonable or not based in the finite elements used in your model, also if the mesh density is coarsened or refined, if the solution type used is ...

What is the difference between H method and P method in FEA? The h-refinement of the finite element method discretizes the problem domain into multiple elements to achieve higher accuracy. The p-refinement increases accuracy by using higher-degree shape functions. Compared to the h-refinement, the p-refinement can provide the advantages of high rates of convergence and accuracy.

What is the FEA method of finite element analysis? Finite Element Analysis works by discretizing the domain of interest and then assembling physics equations to solve the engineering problem at hand. By assembling these elements together to represent the physical system, engineers can predict the behavior of the whole structure.

What is the meaning of FE analysis? Finite element analysis (FEA) is the use of calculations, models and simulations to predict and understand how an object might behave under various physical conditions. Engineers use FEA to find vulnerabilities in their design prototypes.

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What is the difference between CFD and FEA? The difference between FEA and CFD is complex. Finite Element Analysis (FEA) allows you to solve Partial Differential Equations in a certain way, that is traditionally used for structural problems. Computational Fluid Dynamics (CFD) is a set of similar methods, but better suited for solving fluid-flow problems.

What is the difference between FEA and hand calculation? For most engineering calculations, we recommend numerical simulation (FEA, CFD) rather than

handcalcs. The reasons are: Handcalcs require simplifications which often cause the results to be less accurate. For complex structures, appropriate handcalc methods are not available.

What is Sophocles Oedipus the King about? A tragic story from the Greek dramatist, Sophocles, "Oedipus the King" is a well-known and studied play filled with murder, incest, and one man's discovery of the truth about his life. It is the story that you may know because Oedipus murdered his father and married his mother (unknowingly, of course).

When was Oedipus the King by Sophocles published? Definition. Oedipus the King (429-420 BCE), also known as Oedipus Rex or Oedipus Tyrannos ('Tyrannos' signifies that the throne was not gained through an inheritance) is the most famous surviving play written by the 5th-century BCE poet and dramatist Sophocles.

In what year did Sophocles write Oedipus the King and Oedipus at Colonus? It was written shortly before Sophocles's death in 406 BC and produced by his grandson (also called Sophocles) at the Festival of Dionysus in 401 BC.

What is the conflict in Oedipus at Colonus? The play depicts his conflict with Creon, ruler of Thebes, who attempts first through deceit, then through violence, to bring him back, in the knowledge that the city who possesses Oedipus's corpse will gain power from it; but Theseus, ruler of Athens, gives Oedipus his protection.

Why did Oedipus marry his mother? Oedipus went to the same oracle in Delphi that his birth parents had consulted. The oracle informed him that he was destined to murder his father and marry his mother. In an attempt to avoid such a fate, he decided not to return home to Corinth, but to travel to Thebes, which was closer to Delphi.

What lesson does Oedipus teach? In his attempt to flee from fate, Oedipus doomed himself to fulfill his destiny. The moral of the story is that you cannot control your destiny. This concept of fate versus free is the central motif in Oedipus the King.

Why does Oedipus blind himself? Oedipus blinds himself after learning that he inadvertently murdered his father and slept with his mother. He is so appalled by this revelation that he feels the need to physically punish himself. He blinds himself

because he cannot handle the truth of his actions.

Why was Oedipus cursed? Laius, Jocasta, and Oedipus are bound up by two curses laid down by the gods as punishment for Laius' treachery. First, Laius is told he will be killed by his son. Later, Oedipus is told the same prophecy, along with an additional curse: he will sleep with his mother, committing the taboo practice of incest.

Which king married his own mother? Oedipus, in Greek mythology, the king of Thebes who unwittingly killed his father and married his mother. Homer related that Oedipus's wife and mother hanged herself when the truth of their relationship became known, though Oedipus apparently continued to rule at Thebes until his death.

What happens at the end of Oedipus at Colonus? Since Oedipus' final resting place is at Colonus, Athens receives his blessing and protection, and Thebes earns his curse. At the conclusion of the play, Antigone and Ismene return to Thebes, hoping to avert the war and civil strife.

What is the theme of the play Oedipus the King? The theme of fate vs. free will lies at the core of Oedipus the King. The play grapples with the question of whether individuals have the power to shape their destinies or if they are merely subject to the whims of fate.

Is Oedipus a real story? No, Oedipus was not a real person in the play. He was a mythological King of Thebes from the cursed House of Cadmus. According to Apollo's oracle, he was doomed to kill his father and marry his mother.

What is the main idea of the play Oedipus at Colonus? Oedipus at Colonus is a Greek tragedy by Sophocles. It follows the story of Oedipus as he seeks redemption and forgiveness in his final days, while exploring themes of fate and free will.

What is the moral of the story of Oedipus at Colonus? The man who accepts the suffering that life brings, embracing it with resignation to the will of the gods, will receive his heavenly reward. It is for this reason that the Chorus, in the play's final lines, beseeches Oedipus' daughters, Antigone and Ismene, to take comfort from their father's miraculous end.

What is the main conflict of Oedipus the King? One key conflict is the man Oedipus struggling against himself as he accepts responsibility for the plague on his people and discovers the consequences of long-ago actions. The other main conflict is man against fate, which in Ancient Greece would more likely be framed as man against the Gods.

Did Oedipus know he slept with his mother? Jocasta becomes convinced that Oedipus murdered Laius. Oedipus brings in the herdsman who rescued him as a child. Oedipus squeezes the information out of the herdsman and realizes that he is the son of Laius and Jocasta, killed his father (Laius) and slept with his mother (Jocasta).

Who did Oedipus bring to death? Jocasta realizes the truth—that Oedipus is her son as well as her husband—and tells Oedipus to stop the interrogations. He doesn't listen, and an eyewitness, the Herdsman who rescued him when he was an infant, confirms that he was Laius and Jocasta's child, and that Oedipus killed Laius.

Who saved Oedipus as a baby? The servant took the baby away, onto a hilltop, but he could not kill the innocent child. He left Oedipus instead with a shepherd, who brought him across the mountains to the king of Corinth. This king claimed the boy and raised him as his own.

How many children does Oedipus have? Oedipus and Jocasta have four children: Eteocles and Polyneices, Antigone and Ismene.

What happens to Oedipus at the end of the play? At the end of the play, after the truth finally comes to light, Jocasta hangs herself while Oedipus, horrified at his patricide and incest, proceeds to gouge out his own eyes in despair. In his *Poetics*, Aristotle refers several times to the play in order to exemplify aspects of the genre.

Why is Oedipus important? Finally, Oedipus earns royal respect at Thebes when he solves the riddle of the Sphinx. As a gift for freeing the city, Creon gives Oedipus dominion over the city. Thus, Oedipus' nobility derives from many and diverse sources, and the audience develops a great respect and emotional attachment to him.

What is the main idea of Oedipus the King? Quick answer: The main idea of Oedipus the King by Sophocles is that one cannot defy the gods without suffering severe consequences. The play is about Oedipus, the king of Thebes, who inadvertently kills his father and ends up marrying his mother. Even when the terrible truth is revealed, he remains in denial.

What is the main plot of Oedipus? By leaving his home in Corinth, Oedipus thinks he has escaped a terrible prophecy that says that he will kill his father and marry his mother. Oedipus has defeated the riddling Sphinx, saved the seven-gated city of Thebes, and married the queen Jocasta.

What is Sophocles trying to say in Oedipus? Answer and Explanation: The main message of Oedipus Rex is that pride is often an individual's downfall. Oedipus has so much pride he believes he can trick the gods. Had Oedipus not been so self-assured, he would not have experienced such a tragic fall.

What was Sophocles purpose for writing Oedipus? Sophocles, however, illustrates a dynamic of justice among humans. He shows that the world may be cruel and just at the same time by connecting Oedipus' downfall with his own character flaws and wrongdoings, particularly his hasty killing of his own father and his marriage to his mother.

Unidad 2 Lección 1 Gramática (C) - Respuestas

Párrafo 1:

- Pregunta: ¿Cuál es la forma correcta del presente indicativo del verbo "ser" para el sujeto "yo"?
- Respuesta: Soy
- Pregunta: ¿Cuál es la forma correcta del presente indicativo del verbo "estar" para el sujeto "nosotros"?

- Respuesta: Estamos

Párrafo 2:

- Pregunta: ¿Qué adjetivo posesivo se utiliza para referirse a una persona que es el sujeto de la oración?
- Respuesta: Mi
- Pregunta: ¿Cuál es el adjetivo demostrativo que se utiliza para referirse a algo que está lejos del hablante y del oyente?
- Respuesta: Aquel

Párrafo 3:

- Pregunta: ¿Cómo se utiliza el pronombre personal "se" para expresar una acción que realiza un sujeto indeterminado?
- Respuesta: Se utiliza como sujeto de verbos impersonales o para indicar acciones que se realizan por sí mismas.

Párrafo 4:

- Pregunta: ¿Cuál es la forma negativa del adverbio "bien"?
- Respuesta: Mal
- Pregunta: ¿Qué preposición se utiliza para indicar un lugar donde algo está situado?
- Respuesta: En

Párrafo 5:

- Pregunta: ¿Cuál es la forma correcta de escribir la palabra "usted" en español?
- Respuesta: Usted (con U mayúscula)

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