

السادة مدير مدارس المتفوقين في العلوم و التكنولوجيا ..

بناءً على قرار الأستاذ الدكتور الوزير بأن يتم التيسير على أبنائنا الطلاب في الظروف الاستثنائية التي تمر بها البلاد مع مراعاة الحفاظ على المخرجات التعليمية ووفق القرار الوزاري رقم (56) بتاريخ 7/4/2019 الخاص بتوزيع درجات المواد المقررة بالصف الثالث الثانوي بمدارس المتفوقين في العلوم والتكنولوجيا STEM وتشمل الامتحانات كل ما درسه الطالب في الفصل الدراسي الأول وما درسه في الفصل الدراسي الثاني من العام الدراسي 2019/2020 حتى 15 مارس 2020 بالإضافة إلى مخرجات التعلم التي تم دراستها في الصفين الأول والثاني الثانوي. فطبقاً لمخرجات التعلم يكون حتى 15 مارس 2020 يوافق نهاية الأسبوع الخامس في الدراسة وهي يوافق ما يلي بالنسبة لامتحانات اختبار المفاهيم ال (TOC) في الرياضيات و الإحصاء و الميكانيكا.

Subject	UP to L.O.	Notes
Math	MA.3.08	Cancel the Skill 1) Apply understanding of differential equations to real world problem solving
Statistics	ST.3.03	All the Concepts and the Skills
Mechanics	ME.3.05	Only Concepts • Describe the vector nature of angular momentum • Find the total angular momentum about a designated origin of a system of particles • Calculate the angular momentum of a rigid body rotating about a fixed axis

بالنسبة لاختبار استعداد القبول بالجامعات (URT): وتشمل الامتحانات كل ما درسه الطالب في الفصل الدراسي الأول وما درسه في الفصل الدراسي الثاني من العام الدراسي 2019/2020 حتى 15 مارس 2020 بالإضافة إلى مخرجات التعلم التي تم دراستها في الصفين الأول والثاني الثانوي (Inventory) والتي لم تتأثر بالأحداث الجارية وتجرى الامتحانات في وفق الجدول المعلن والمعتمد من وزارة التربية والتعليم. يتم حذف منها ماتضمن حذفه من منهج الصف الثالث و هي المواضيع الآتية ..

3.01.06 Recognize and justify when to use a particular technique of integration and apply to real-world situations

مستشار الرياضيات
مستشار العلوم
مستشار الفيزياء

مستشار الرياضيات
حسين محمود حسين



Specifications for the URT Mathematics Test

Content

1. Pre-Algebra and probability /Elementary Algebra / Intermediate Algebra

1.01 Pre-Algebra and probability

- 1.01.01 Explain probability as a numerical description, between 0 and 1, of the likelihood of an event
- 1.01.02 Determine a set of possible outcomes
- 1.01.03 Use fundamental counting principal to solve problems
- 1.01.04 Use the rules of probability to compute probabilities of compound events in a uniform probability model
- 1.01.05 Solve counting problems in which order is not important
- 1.01.06 Determine the relations between two Events (mutually exclusive – dependent - independent)
- 1.01.07 Solve problems on conditional probability

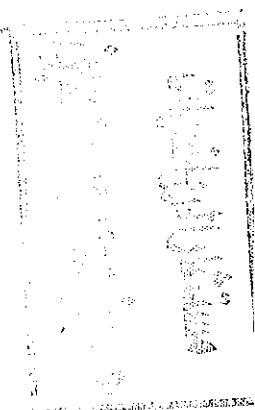
1.02 Elementary Algebra

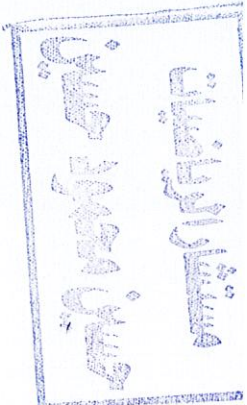
- 1.02.01 Given data, create functions that model applied situations. Calculate a least squares regression line, understand its properties, compute and interpret correlation for data
- 1.02.02 Analyze the functions and their characteristics. Explain the different properties of the algebraic function and its graph. Linear Functions, Quadratic Functions, Cubic Functions, Absolute Value Functions,
- 1.02.03 Use first and second differences to create models that represent data
- 1.02.04 Review solving quadratic equations using completing squares

1.03 Intermediate Algebra

- 1.03.01 Interpret the functions based on the real-world situation they model
- 1.03.02 Identify, interpret and describe real-world step functions
- 1.03.03 Analyze direct and inverse variations based on the real-world situation they model
- 1.03.04 Represent complex numbers three ways: as ordered pairs, graphically on the coordinate plane, and in the form $a+bi$
- 1.03.05 Use different properties of exponential and logarithmic functions
- 1.03.06 Interpret and manipulate rational exponents
- 1.03.07 Use exponential functions to describe growth and decay rates
- 1.03.08 Identify arithmetic and geometric sequences
- 1.03.09 Solve a system of two equations and two unknowns by graphing and algebraic methods
- 1.03.10 Apply matrix operations to solve a system
- 1.03.11 Determine and interpret optimal solutions and the constraints to real-world situations using Linear Programming

- 1.03.12 Use the properties of determinants to determine the value of a determinant
- 1.03.13 Write objective functions and equations describing constraints
- 1.03.14 Model real-world situations using polynomial and absolute value functions
- 1.03.15 Find the roots of polynomial equations algebraically
- 1.03.16 Reveal and explain different properties of the algebraic function and its graph
- 2. Coordinate Geometry / Plane Geometry/Trigonometry
 - 2.01 Coordinate Geometry
 - 2.01.01 Draw 2-D cross-sections of a representation of a 3-D object
 - 2.01.02 Analyze the functions and their characteristics
 - 2.01.03 Explain the different properties of the algebraic function and its graph, focus, directrix, etc.
 - 2.01.04 Graph using both rectangular and polar coordinates
 - 2.02 Plane Geometry
 - 2.02.01 Determine axes of similarity
 - 2.02.02 Solve problems related to geometric shapes: circles – triangles – polygons – parallel lines
 - 2.02.03 Determine area and volume of different shapes and figures
 - 2.03 Trigonometry
 - 2.03.01 Review sine, cosine, and tangent ratios and Pythagorean Theorem
 - 2.03.02 Solving triangles (using law of sine and cosine)
 - 2.03.03 Apply sine and cosine to solve measurement problems (shapes other than triangles)
 - 2.03.04 Extend the domain of trigonometric functions using the unit circle (convert between radians and degrees)
 - 2.03.05 Identify different characteristics of sine, cosine and tangent functions: shape, domain, range, amplitude, intercepts, max/min, period, asymptotes.
- 3. Calculus
 - 3.01.01 Recognize limits and continuity
 - 3.01.02 Review the derivatives rules
 - 3.01.03 Determine the derivative of a composite function using the chain rule and apply this to real-world situations
 - 3.01.04 The derivatives rules applications (slope of the tangent – min. and max. values – convexity and point of inflection)
 - 3.01.05 Applications on minimum and maximum
 - 3.01.06 Recognize and justify when to use a particular technique of integration and apply to real-world situations





4. Mechanics (statics – dynamics)

4.01 Statics

- 4.01.01 Find the magnitude, the direction of the resultant of two forces act at a point
- 4.01.02 Find the magnitude and the direction of the resultant of a set of coplanar forces meeting at a point.
- 4.01.03 Investigate equilibrium of a particle under the effect of a set of coplanar forces meeting at a point.
- 4.01.04 Recognize the applications of the above study statics in physical and life situations

4.02 Dynamics

- 4.02.01 Recognize the concept of the uniform velocity (velocity vector – uniform motion - Average velocity vector –Instantaneous velocity vector – measuring units of velocity.
- 4.02.02 Distinguish between the concepts of the average velocity and the average speed in the rectilinear motion
- 4.02.03 Apply the concepts of the velocity, average velocity, acceleration in modeling physical and life application
- 4.02.04 Recognize the concept of the relative velocity.
- 4.02.05 Deduce the laws of motion with uniform acceleration if a body moves with uniform acceleration and :
 $v = u + at$, $s = ut + \frac{1}{2}at^2$, $v^2 = u^2 + 2as$
- 4.02.06 Recognize the vertical motion under gravity.
- 4.02.07 Recognize the graphical representation of the (displacement - time curve), (velocity - time curve).