

تعداد سوالات: تستی: ۲۰ تشریحی: ۵  
زمان آزمون (دقیقه): تستی: ۳۰ تشریحی: ۶۰

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نام درس: زبان تخصصی  
رشته تحصیلی / کد درس: ریاضی محض و کاربردی ۱۰۵۸  
فراگیر ارشد ریاضی ۱۱۱۱۲۰۶  
کد سری سؤال: یک (۱)  
استفاده از:

مجاز است.

امام خمینی (ره): این محرم و صفر است که اسلام را زنده نگه داشته است.

گزینه مناسب را برای تکمیل جملات انتخاب کنید.

- The main problem of Roman numerals was that they had no ..... for zero  
a. letter                      b. symbol                      c. number                      d. sign
- The map whose graph is ..... in Fig (1) not only is continuous but also is differentiable.  
a. located                      b. obvious                      c. shown                      d. vital
- A subspace is called ..... if it contains at least one vector other than o.  
a. trivial                      b. non- trivial                      c. perfect                      d. non – perfect
- If we add the suffix " – ish" to a noun we get a/ an .....; for example "childish " from "child".  
a. adverb                      b. adjective                      c. verb                      d. noun
- Let us now consider how the code of Example 11.2 might be .....  
a. true                      b. correct                      c. generalized                      d. divided
- The word illustrated is equivalent to which one?  
a. divided                      b. shown                      c. known                      d. decomposed
- which of the following suffixes distinguish nouns?  
a. -at                      b. -ic                      c. – ance                      d. – ate
- Which of the following suffixes distinguish verbs?  
a. – ize                      b. – ful                      c. – ence                      d. – less
- The adjective corresponds to the verb " to create" is  
a. creativity                      b. creativey                      c. created                      d. creative
- A group G is said to be a simple group if the only normal subgroups of it are the  
a. cyclic subgroup                      b. Ahelian subgroup  
c. trivial subgroups                      d. finite subgroups
- A relation "~" on X for which whenever  $a \in X$  , $a \sim a$  is called.....  
a. transitive                      b. associative                      c. symetric                      d. reflexive
- If there is a bijection between the sets A and B , we say that they are  
a. equal                      b. non – congruent                      c. nilpotent                      d. equipotent

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13. If the limit of the function  $f$  exists at  $x_0$  it is....  
a. trivial                      b. unique                      c. finite                      d. infinite
14. If  $A$  is equipotent to the set of naturals we say that  $A$  is  
a. infinite                      b. countable                      c. transtinite                      d. uncountable
15. If  $n$  divides  $x-y$ , we say that  $x$  and  $y$  are.....  
a. congruent                      b. equivalent                      c. equal                      d. congruence
16. Every octahedron has eight ....  
a. sides                      b. verses                      c. faces                      d. sufaces
17. In  $\mathbb{R}$  every Cauchy sequence.....  
a. converts                      b. limited                      c. converges                      d. diverted
18. In any field, such as  $\mathbb{R}$ , division by zero is .....  
a. nonsense                      b. trivial                      c. vague                      d. formal
19. The conic sections have been known by antient Greeks since the time of .....  
a. Archemedies                      b. Tales                      c. Apolonius                      d. Eulids
20. The cycloid has been studied by Pascal using a rolling wheel on a straight.....  
a. circle                      b. line                      c. surface                      d. plane

### سوالات تشریحی

متون زیر را به فارسی روان ترجمه کنید. (هر سوال ۲ نمره)

1. In Chapter 9 we discussed parabolas. A parabola is one type of conic section. Parabolas will be discussed further in Section 10.3. Other conic sections are circles, ellipses, and hyperbolas. Each of these shapes is called a conic section because each can be made by slicing a cone and observing the shape of the resulting slice. The methods used to slice the cone to obtain each individual conic section are illustrated in Fig. 10.1.

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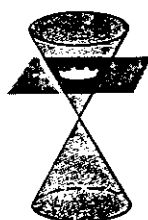
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Conic Sections



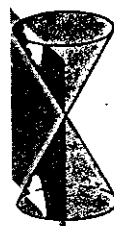
Circle



Ellipse



Parabola



Hyperbola

Figure 10.1

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A circle may be defined as the set of points in a plane equidistant from a fixed point called its center (Fig. 10.2). The standard form of the equation of a circle with its center at the origin is

$$x^2 + y^2 = r^2, \text{ where } r \text{ is the radius.}$$

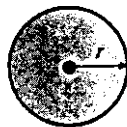


Figure 10.2

Trial division works well when the number in question is small. But it is not a sensible way to verify the primality of large numbers. That is because the amount of computation it calls for gets quickly out of hand. For numbers with even just a few dozen digits, the computer run – times for trivial – division primarily testing start being measured in terms of the age of universe.

4. The general study of curves and surfaces obtained as graphs of polynomials are known as algebraic geometry. A central problem here is to discover which properties of a curve or a surface remain invariant under certain transformations – given by polynomials in the coordinates.

5. one central tool in complex analysis is the line integral . The integral around a closed path of a function which is holomorphic everywhere inside the area bounded by the closed path is always zero; that is the Cauchy integral theorem.