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NPTEL

reviewer2@nptel.iitm.ac.in ▼

Courses » Basic Calculus for Engineers, Scientists and Economists

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# Unit 2 - Week 01 - Numbers, Functions, Sequences and Limits of Functions

## Course outline

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Week 01 - Numbers, Functions, Sequences and Limits of Functions

- Lecture 01 - Numbers
- Lecture 02 - Functions-1
- Lecture 03- Sequence-1
- Lecture 04- Sequence-2
- Lecture 05- Limits and Continuity-1
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- Quiz : Assignment-1
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Week- 02- Continuity, Derivative, Maxima and Minima and Taylor's expansion

Week 03- Integration Of Real Functions

Unit 4 - Week - 04 - Function of Two Variables, Limits, Continuity,

## Assignment-1

The due date for submitting this assignment has passed. **Due on 2017-02-07, 23:59 IST.** As per our records you have not submitted this assignment.

1) 1. Solving this inequality,

$$\left| \frac{z}{5} - 1 \right| \leq 1.$$

We get  $z \leq b$ , then

- $b = 0.$
- $b = 5.$
- $b = 10.$
- $b = 2.$

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$b = 10.$

1 point

2) 2. Let  $a$  and  $b$  are two irrational numbers. Then

- $ab$  is always rational.
- $ab$  is always irrational.
- $ab$  may be rational.
- None of these are true.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$ab$  may be rational.

1 point

3) 3. For the function  $f(x) = 2e^{-x} - 3$  with  $\text{dom } f = (-\infty, +\infty)$ , then

- $\text{range of } f = (-3, +\infty).$
- $\text{range of } f = (-1, +\infty).$
- 

1 point

Differentiability,  
Unconstrained  
and Constrained  
minimization

Week - 05 -  
Infinite Series,  
Multiple Integrals

$$\text{range of } f = (3, +\infty).$$

$$\text{range of } f = (-3, -1).$$

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$$\text{range of } f = (-3, +\infty).$$

4) 4. The function whose value at any number  $x$  is the greatest integer less than or equal to  $x$  is called the greatest integer function. It is denoted by  $[x]$ , then which of the following statement is true



$$[5.9] = 6.$$



$$[2.4] = 3.$$



$$[-5.9] = -5.$$



$$[-2.4] = -3.$$

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$$[-2.4] = -3.$$

5) 5. If  $f$  and  $g$  are two continuous function at  $x = c$ , then at  $x = c$



$f + g$  may not be continuous.



$f \circ g$  is always continuous.



$fg$  may not be continuous.



$\frac{f}{g}$  where  $g(c) \neq 0$  is not continuous.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$f \circ g$  is always continuous.

6) 6.  $\lim_{y \rightarrow 0} \frac{\sin 3y \cot 5y}{y \cot 4y} =$



$$\frac{4}{15}.$$



$$\frac{12}{5}.$$



$$3.$$



Can not be determined.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

$$\frac{12}{5}.$$

7) 7. Let  $x_0 = 1$ ,  $x_{n+1} = 3x_n - 2$ , then  $\{x_n\}$  converges to



$$-$$

1 point



1 point

1 point

1 point

$$\frac{2}{3}.$$



$$0.$$



$$-1.$$



$$1.$$

No, the answer is incorrect.

Score: 0

Accepted Answers:

1.

8) 8. Let  $f(x) = \begin{cases} \frac{x^2}{4}, & \text{if } x < 2 \\ e^{ax}, & \text{if } x \geq 2. \end{cases}$ , then  $f(x)$  is continuous at  $x = 2$  for

1 point



$$a = \frac{1}{2}.$$



$$a = \log \frac{1}{2}.$$



$$a = 0.$$



$$a = \log \frac{1}{4}.$$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$a = 0$ .

9) 9. Every Cauchy sequence has a convergent subsequence.

1 point



True.



False.

No, the answer is incorrect.

Score: 0

Accepted Answers:

True.

10) 10. The function  $f(x) = \log(\sin x^2)$  is continuous at  $x = \frac{\pi}{2}$ .

1 point



True.



False.

No, the answer is incorrect.

Score: 0

Accepted Answers:

True.



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