

Math 1710-05  
Test #1 Chapter 1

Show work as much as possible to earn full credit. Each question is 10 points.

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1. Use the following to fill in the blank spaces: Natural number, Integer, Rational Number, and Irrational Number.

a.  $\sqrt{13}$  is .....

b.  $\frac{1}{3}$  is .....

c.  $\sqrt{4}$  is .....

d. -2.33 is .....

e. 5 is .....

2. From 1985 to 2002 the average tuition and fees at private colleges and university rose from \$6,121 to \$18,273 , while the Consumer Price Index (CPI) changed from 107.6 to 179.

a. Find the percentage change in tuition and fees from 1985 to 2002.

b. Find the percentage change in CPI from 1985 to 2002.

c. Compare the percentage change in tuition and fees to the percentage change in the CPI.

3. a. Write the given number in scientific notation.

-0.0087

b. Write the given number in Standard notation .

$-0.00872 \times 10^8$

4. a. Find the distance in the  $xy$  – plane between the given two points.  
 $(2, -2)$  and  $(5, 2)$

b. The life expectancy of a female born in 1980 was 77.4 years and for a female born in 2000 it was 79.5 years. Use the midpoint formula to estimate the average life expectancy of a female born in 1990.

5. Let  $f(x) = |x - 1|$ .

a. use  $f(x)$  to complete the following table.

X	-2	-1	0	1	2
f(x)					

b. Graph  $y = f(x)$  by hand.

6. State the domain and range of the following functions. Write your answers in interval notation.

a.  $g(x) = x^2 - 3$

b.  $f(x) = x$

c.  $g(x) = \frac{1}{x-1}$

d.  $g(x) = -3$

7. a. Find the slope of the line passing through the given pair points.  
 $(-1, 4)$  and  $(5, -2)$ .

b. A driver's distance in miles  $D$  from a rest stop on an interstate highway after  $x$  hours is given by  $D(x) = 75x$ .

➤ How far is the driver from the rest stop after 2 hours?

➤ Find the slope of the graph of  $D(x)$ .

8. Let  $f(x) = x^3 - 2x$ ;  $x_1 = 2$  and  $x_2 = 4$ . Find the average rate of change of  $f(x)$  from  $x_1$  to  $x_2$ .

9. Let  $f(x) = 2x^2 - x + 1$ . Find the following.

a.  $f(x+h)$

b. The difference quotient and simplify.

10. Answer True or False

a.  $f(x) = x^3 - 2x$  is a linear function.

b.  $f(x) = 25$  is a linear function.

c.  $x = y^2$  is the graph of a function.

d.  $f(x) = x^2 - 4$  is not the graph of a function.