

MAT220 – Calculus I

Test 1 Review

NOTES: This test is worth 15% of your grade

Closed-book closed-notes

Bring your calculator!!!!

All answers must be given in exact form, not decimal form.

(For example, the answer would be $\ln(3)$, not 1.0986)

ALWAYS SHOW YOUR WORK!!!!!!

Section 1.1 – Look over exercises 3, 6, 11, 13, 29, 35

Evaluate and interpret function notation.

Find the equation of the line given two points.

Find the equation of the line parallel or perpendicular to a given line

Domain and Range from formula, graph, context

Section 1.2 – Look over exercises 1, 3, 5, 11, 35

Domain, Range, vertical intercept and horizontal asymptote of an exponential function.

Identify exponential growth/decay rates

Sketch a graph of a continuous function f such that

f is increasing for $-4 < x < -2$ and $x > 3$

f is decreasing for $x < -4$ and $-2 < x < 3$

f is concave down for $-3 < x < 1$

f is concave up for $x < -3$ and $x > 1$

Tell whether the function (given by a formula, graph, table or context) is increasing, decreasing, concave up, down, or linear

Section 1.3 - Look over exercises 1, 14, 15, 17, 21, 32, 37, 54

Transformations of functions (given by a formula, graph, or table)

Composition of functions (given by a formula, graph, or table)

Decomposition of functions

Tell whether a function (given by a formula, graph, table or context) is even, odd or neither

Inverse functions – from table, graph, formula or context

Section 1.4 - Look over exercises 3, 11, 13, 19, 31, 39, 40

Domain, Range, horizontal intercept and vertical asymptote

Properties of logarithms.

Solving exponential equations using logs

Find the inverse of an exponential function

Section 1.5 - Look over exercises 1, 4, 15, 31, 37

Determine the domain, range, midline, amplitude, period, and phase shift of

$$f(x) = 5\cos(2x + \pi) - 2$$

Give the domain and range of inverse trigonometric functions:

arcsine, arccosine, arctangent

Fill in Table

Angle θ (Radians)	$\sin \theta$	$\cos \theta$	$\tan \theta$	$\sec \theta$	$\csc \theta$	$\cot \theta$
$-\frac{\pi}{2}$						
$\frac{2\pi}{3}$						

Find all values of x in the interval $[0, 2\pi)$ that satisfy $2\cos(x) + 1 = 0$

Section 1.6 - Look over exercises 5, 6, 14, 21

Domain and range (polynomial and rational functions)

End behavior

From a graph, give lowest degree and sign of leading coefficient

Polynomial functions – Find zeros

When is the function positive?

Rational functions...Intercepts, asymptotes, "holes"

Section 1.7 - Look over exercises 1, 3, 5, 11, 22

Continuous? Formula and graph

Intermediate Value Theorem

Section 1.8 - Look over exercises 1, 2, 3, 19, 21, 30, 35, 36

When do they exist?

Finding limits given a formula or graph

Examples:

$$\lim_{x \rightarrow 2} (3x - 7)$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x}$$

$$\lim_{x \rightarrow 1^-} \frac{|x-1|}{x-1}$$

$$\lim_{x \rightarrow \infty} \frac{3x^2 - 4x + 5}{x^2 - x + 87}$$