

Name: _____

Class: MAT1320 - Fall 2015

Class #: _____

Section #: _____

Instructor: Benoit Dionne

Assignment: Assignment 1 (Fall 2015)

Question 1: (1 point)

Let

$$g(t) = \frac{\sqrt{t-4}}{\sqrt{6-t}}$$

What is the domain of g ? It is the set of all t such that:

- (a) $4 \leq t < 6$
- (b) $t \neq 6$
- (c) $t \geq 4$
- (d) $4 \leq t \leq 6$
- (e) None of the given answers are correct.
- (f) $4 < t < 6$

Question 2: (1 point)Let $f(x) = -x|x|^3$. Is f an even function, an odd function, or neither even nor odd?

- (a) Neither even nor odd
- (b) Even
- (c) Odd

Question 3: (1 point)

Using your knowledge of trigonometric identities, find the exact value of $\cos(x+y)$ knowing that x and y are between 0 and $\frac{\pi}{2}$, that $\cos(x) = \frac{5}{13}$ and that $\sec(y) = \frac{25}{24}$. Your answer must be a rational number, written in the form of an irreducible fraction p/q (such as $2/3$, $4/5$, $-1/4$, etc.), with $q > 0$. Give the integers p and q .

 $p =$ _____, $q =$ _____

Question 4: (1 point)

Find the values of x in the interval $[0, 2\pi / 9]$ such that $2 \sin(9x) - 1 = 0$. If there is more than one value, list them all, separating each one by a semi-colon (;).

Question 5: (1 point)

Give the value of x for which

$$\ln(x) + \ln(x + 4) = \ln(4)$$

Give an answer precise to three decimal places.

$x =$ _____

Question 6: (1 point)

Use the table of values below to evaluate each of the following expressions.

x	1	2	8	14	0	-7
$f(x)$	8	14	50	86	2	-40
$g(x)$	0	-7	-511	-2,743	1	344

$$(f \circ f)(1) = \underline{\hspace{2cm}}$$

$$(f \circ g)(2) = \underline{\hspace{2cm}}$$

$$(g \circ f)(2) = \underline{\hspace{2cm}}$$

$$(g \circ g)(1) = \underline{\hspace{2cm}}$$

Question 7: (1 point)

Find the inverse function f^{-1} of the function

$$f(x) = \frac{5x + 5}{6x + 8}$$

$$f^{-1}(x) = \underline{\hspace{2cm}}$$

Question 8: (1 point)

A book is thrown into the air on the planet Calculus and its height in metres at time t in seconds is given by the equation

$$y = 4t - 1.9t^2.$$

In the following, please ensure that your answer is accurate to 3 decimal places.

- (a) Find the average velocity \bar{V} of the book between time $t = 1$ and $t = 1.1$ seconds.
 $\bar{V} =$ _____ m/s.
- (b) Find the average velocity \bar{V} of the book between time $t = 1$ and $t = 1.01$ seconds.
 $\bar{V} =$ _____ m/s.
- (c) Find the average velocity \bar{V} of the book between time $t = 1$ and $t = 1.001$ seconds.
 $\bar{V} =$ _____ m/s.
- (d) Deduce the value of the instantaneous velocity \bar{V} of the book at time $t = 1$ seconds.
 $\bar{V} =$ _____ m/s.
-