

Due: Friday, September 2, 2016

Show work and justify answers. Little or no work may receive little or no credit. You are encouraged to get help from your instructor or the MLC, if needed.

ALGEBRA

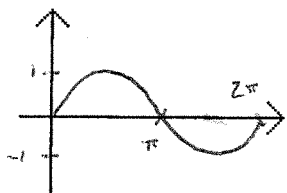
1. (2 pts) Solve for x : $x^2 + 2x - 5 = 3$
 $x^2 + 2x - 8 = 0$
 $(x+4)(x-2) = 0$
 $x = -4$ or $x = 2$

2. (2 pts) Solve for x : $\frac{4}{x-2} - 1 = x$
 $\frac{4}{x-2} = x+1$
 $4 = x^2 - x - 2$
 $0 = x^2 - x - 6$
 $0 = (x-3)(x+2)$
 $x = 3$ or $x = -2$

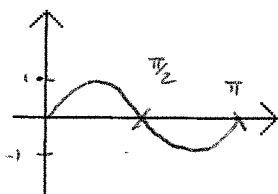
TRIG - Review sections 1.4 and 1.5 in your textbook to answer questions 3-5.

3. (6 pts) Sketch a graph for each. Clearly label the scale on the axes and provide appropriate points.

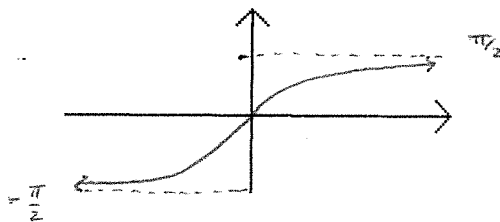
(a) $y = \sin x$



(b) $y = \sin 2x$



(c) $y = \arctan x$



4. (5 pts) Evaluate exactly - no calculators.

(a) $\sin(\pi/3)$

$\frac{\sqrt{3}}{2}$

(b) $\sin(4\pi/3)$

$-\frac{\sqrt{3}}{2}$

(c) $\cos(5\pi/3)$

$\frac{1}{2}$

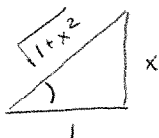
(d) $\tan(\pi/4)$

1

(e) $\arctan(1)$

$\frac{\pi}{4}$

5. (4 pts) Use an appropriate triangle to simplify the expression so that no trigonometric functions remain.



$\cos(\arctan x) = \frac{1}{\sqrt{1+x^2}}$

CALC I

6. (6 pts) Differentiate.

(a) $f(x) = x^{4/3} \tan x$

$f'(x) = \frac{4}{3}x^{1/3} \tan x + x^{4/3} \sec^2 x$

(b) $g(t) = \ln(4t+5)$

$g'(t) = \frac{4}{4t+5}$



7. (12 pts) Evaluate. Appropriate notation is required.

$$(a) \lim_{x \rightarrow 1} \frac{x^3 - x}{x - 1} = \lim_{x \rightarrow 1} \frac{x(x-1)(x+1)}{(x-1)} = \lim_{x \rightarrow 1} x(x+1) = 2$$

$$(b) \lim_{x \rightarrow \infty} \frac{\ln(e^x + 1)}{x} \stackrel{L'H}{=} \lim_{x \rightarrow \infty} \frac{e^x}{e^x + 1} = \lim_{x \rightarrow \infty} \frac{1}{1 + e^{-x}} = 1$$

$$(c) \int \frac{x^3 - 1}{x} dx = \int \left(x^2 - \frac{1}{x}\right) dx = \frac{x^3}{3} - \ln|x| + C$$

$$(d) \int_{\pi/4}^{\pi/3} \sin(2x) dx = -\frac{1}{2} \cos(2x) \Big|_{\pi/4}^{\pi/3} = -\frac{1}{2} \left(-\frac{1}{2} + 0\right) = \frac{1}{4}$$

8. (2 pts) Answer the following questions using the main course webpage:

(a) What are the dates of the three common hour exams? Sept 22, Oct 17, Nov 17

(b) Can you use a calculator (or other electronic device) during a M172 exam? NO

9. (1 pts) During the semester, optional supplementary help sessions will be available for students who are struggling with the material. Please circle all the times which you would be available to attend if you needed to. You may also select "no interest" if you would not attend.

Wednesdays: 3pm 4pm | Thursdays: 9am 11am 1pm 3pm 4pm | NO INTEREST