So…you are planning on taking
Math 103 – College Trigonometry – next term…

Based on surveys of previous Math 103 students, the Mathematics Division and your fellow students want you to know that you should understand and have mastered all of the following topics and sample review questions in order to succeed in Math 103. However, this is only a sample of the important topics that are expected prerequisite knowledge for Math 103. The ability to complete this small sample of problems does not indicate complete readiness for the class. Rather, these questions should be used as a guideline for the basic types of problems to review before the first day of classes.

If you need more review, study the material and work problems from the chapters listed after each problem. All sections mentioned are in our current Math 089-095 book *Elementary & Intermediate Algebra* (3rd edition) by Tussy/Gustafson (T/G).

Algebra topics to review:

- Operations with fractions without use of a calculator. (#1, 2 below)
- Functions and function notation, reading information from a graph. (#4, 6 below)
- Domains of functions. (#5 below)
- Simplifying radical expressions. (#7, 8 below)
- Multiplying and factoring polynomials. (#9, 10 below)
- Solving linear and quadratic equations. (#3, 11 below)
- Complex numbers. (#12 below)
- Basic geometry (#13 and 14 below)
- Dimensional analysis (#15 below)
- Graphing (#16 below)

Sample review questions:

Do the following **without** using a calculator.

1. Add *mentally* (without scratch work). Give answers as improper fractions. *(T/G Section 1.2)*

   a) $5\pi + \frac{2\pi}{5} + (-2\pi)$ b) $-2\pi + \frac{\pi}{4}$

2. Simplify. Scratch work is OK. *(T/G Section 1.7)*

   a) $\frac{3}{5} \cdot \frac{5}{13} - \frac{4}{5}\left(\frac{-12}{13}\right)$ b) $2x - \frac{\pi}{2}$ if $x = \frac{\pi}{6}$

3. Solve for *x*. Do not give decimal answers. *(T/G Section 2.4)*

   a) $\frac{1}{2}x - \frac{\pi}{3} = 0$ b) $2x + \frac{\pi}{4} = 2\pi$

4. Given $f(x) = 2x^2 - 5x - 7$, evaluate as indicated. Simplify answers. *(T/G Sections 8.7, 8.8)*

   a) $f(-2)$

   b) $f(x+4)$

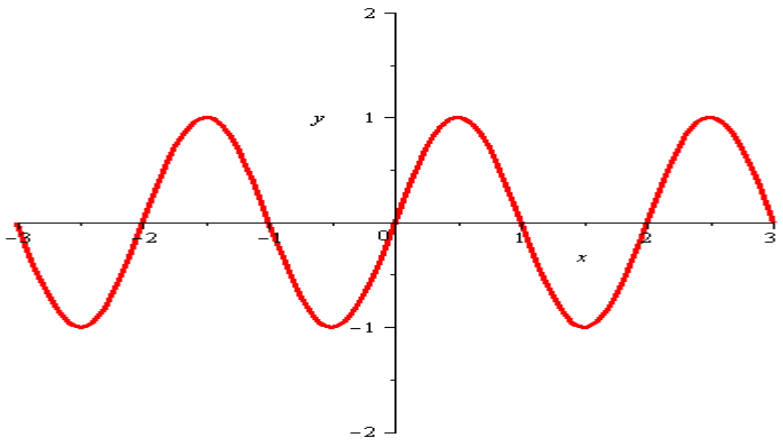
5. Find the domain of the following function. *(T/G Section 6.1)*

   $$h(x) = \frac{x+7}{x^2 - 5x - 24}$$

6. Given the graph of $f(x)$ below, find the indicated values. *(T/G Sections 8.7, 8.8)*

a) Find $f(1.5)$

b) Find all values of x such that $f(x) = 1$.



7. Put in simplest radical form. *(T/G Section 10.2)*

a. $\dfrac{8-\sqrt{24}}{2}$

b. $\dfrac{1}{\sqrt{3}/2}$

c. $\dfrac{\sqrt{3}}{2}\cdot\dfrac{1}{3}+\dfrac{\sqrt{2}}{3}\cdot\dfrac{3}{2}$

d. $\sqrt{\dfrac{1+\frac{\sqrt{3}}{2}}{2}}$

8. Simplify. *(T/G Sections 9.3, 9.4)*

a. $\sqrt{300}$

b. $\left(5+2\sqrt{3}\right)\left(4-6\sqrt{2}\right)$

c. $\sqrt{(3x+1)^2}$

9. Factor. *(T/G Section 5.6)*

a. $2x^2+5x-7$

b. $x^2-10x-24$

10. Multiply. *(T/G Section 4.6)*

a. $(3x-5)(4x+1)$

b. $(3y-4t)(3y+4t)$

c. $(3x-5)^2$

11. Solve.

a. $3x-14=2(x+5)-10$ *(T/G Section 2.4)*

b. $y^2-17y+72=0$ *(T/G Section 5.7)*

c. $2x^2+3x-1=0$ *(T/G Section 10.2)*

d. $x^3-9x=0$ *(T/G Section 5.7)*

12. Perform the indicated operations given $i=\sqrt{-1}$. *(T/G Section 9.7)*

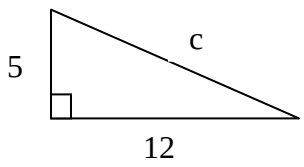
a. $(3+2i)-(4-6i)$

b. $(3+2i)(4-6i)$

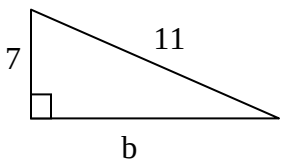
c. $\dfrac{3+2i}{5-6i}$

13. Solve for the missing side of the right triangle. *(T/G Section 9.6)*

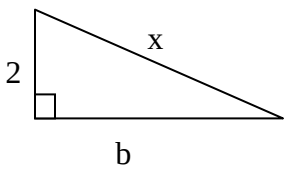
a. Find c:



b. Find b:

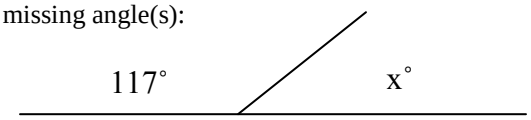


c. Find b in terms of x.

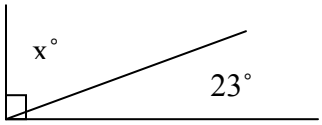


14. Find the missing angle(s):

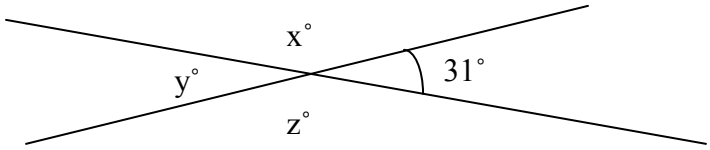
a.



b.



c.



15. Use dimensional analysis (also called "unit factor conversions") to convert the rate 85 ft/sec to mi/hr. Round to the nearest tenth. (Recall 1 mile = 5280 feet.)

16. Graph $y = x^2 - 3x + 1$ by creating a table of values and plotting points.

Sample review answers

1. a) $\frac{17\pi}{5}$ **b)** $\frac{-7\pi}{4}$

2. a) 63/65 **b)** $\frac{-\pi}{6}$

3. a) x = $\frac{2\pi}{3}$ **b)** $\frac{7\pi}{8}$

4. a) 11 **b)** $2x^2 + 11x + 5$

5. All real numbers except 8 and -3.

6. a) $f(1.5) \approx -1$
b) Approximately -1.5, 0.5, 1.5

7. a) $4 - \sqrt{6}$
b) $\frac{2\sqrt{3}}{3}$
c) $\frac{\sqrt{3}+3\sqrt{2}}{6}$ or $\frac{\sqrt{3}}{6}+\frac{\sqrt{2}}{2}$
d) $\frac{\sqrt{2+\sqrt{3}}}{2}$

8. a) $10\sqrt{3}$
b) $20 - 30\sqrt{2} + 8\sqrt{3} - 12\sqrt{6}$
c) $|3x+1|$

9. a) $(x - 1)(2x + 7)$
b) $(x - 12)(x + 2)$

10. a) $12x^2 - 17x - 5$
b) $9y^2 - 16t^2$
c) $9x^2 - 30x + 25$

11. a) 14
b) 9, 8
c) $\frac{-3 \pm \sqrt{17}}{4}$
d) -3, 0, 3

12. a) $-1 + 8i$ **b)** $24 - 10i$ **c)** $\frac{3}{61} + \frac{28}{61}i$

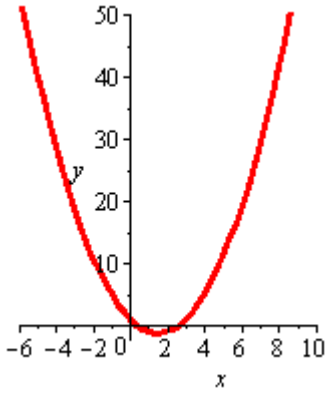
13. a) $c = 13$, **b)** $b = \sqrt{72} = 6\sqrt{2}$ **c)** $b = \sqrt{x^2 - 4}$

14. a) 63° **b)** 67° **c)** $x = 149°, y = 31°, z = 149°$

15. 58.0 mi/hr

16. Numbers in table may vary.

x	y
-5	41
-3	19
-1	5
0	1
1	-1
3	1
5	11
8	41



Resources available:

- **Math Help Session –** Math Help Session starts in the first week of classes each term in BHL-107. Schedules are posted throughout Bauer Hall. During posted hours free tutoring is available from instructors who have volunteered their time. Video tapes and TV/VCR combos are also available in this room, as well as computers with some tutoring programs. See http://web.clark.edu/math/helpsess.htm for the current schedule.

- **Tutoring/Writing Center** – Tutoring services are available free of charge to all registered Clark College students. Faculty-recommended tutors provide help in many subject areas, not just math. You are encouraged to visit the Tutoring/Writing Center, in HKH-102, early in the quarter to request help and check posted tutor schedules. There is also a T/WC Annex in AA4-106. See http://www.clark.edu/student_services/tutoring_center.php for more information.

- **Websites**
  - http://web.clark.edu/math/Calculator/ - This website has videos demonstrating how to use a variety of features of the TI-84 graphing calculator.
  - http://www.purplemath.com/modules/index.htm
  - http://www.sosmath.com/algebra/algebra.html
  - http://www.interactmath.com/ – This website accompanies some of our textbooks and contains guided tutorials for those classes, but also for any algebra textbook by the same publisher. (e.g. *Blitzer: Essentials of Introductory & Intermediate Algebra* will contain useful examples and practice problems.) ***Note:*** *the download and installation of a plug-in is required.*
  - http://www.wtamu.edu/academic/anns/mps/math/mathlab/beg_algebra/beg_alg_tut33_geom.htm - A tutorial covering some basic geometry skills you should know.

- **Books for review**
  - Forgotten Algebra (Paperback) by Bleau,
    ISBN-13: 978-0764120084 (Available in the Clark library and bookstore.)

  - Algebra I (Cliffs Quick Review) (Paperback) by Bobrow,
    ISBN-13: 978-0764563706 (Available in the Clark library and bookstore.)

  - Algebra II (Cliffs Quick Review) (Paperback) by Kohn and Herzog,
    ISBN-13: 978-0764563713

  - Schaum's Outline of Elementary Algebra (Paperback),
    ISBN-13**:** 978-0071410830

  - Schaum's Outline of Intermediate Algebra (Paperback),
    ISBN-13**:** 978-0070608399