# Preparing for the Accuplacer College-Level Math Test

Students at GCC are required to take a placement test before their first math class. It is recommended that students review prior to taking this test. If a student has taken Calculus, Pre-Calculus, or Algebra 3-4 and Trigonometry in high school, then the College-Level Math placement test is the placement test to take first. Prepare for this test by visiting the Accuplacer website to learn details about the test and take the Accuplacer practice test. You may also want to study by taking the following GCC Review.

**Accuplacer Test Details**

The Accuplacer College-Level Math assessment test that you are studying for contains 20 multiple-choice questions. The highest score possible is 120 points. Currently, you need 60 points on the assessment test to qualify to take Calculus.

The Accuplacer College-Level Math assessment test is taken on a computer. You may not bring a calculator when you take the assessment. When a problem on your assessment needs a calculator, one will pop up on your screen.

**Accuplacer Website:** http://accuplacer.collegeboard.org/students

Once at the web site select the tab titled Accuplacer tests located at the top of the page, then select the College-Level Math link. Find the practice test and if you need help there are many YouTube links that give detailed explanations on how to solve the College-Level Math practice test.

**GCC Review for College-Level Accuplacer Placement Test**

The following problems will give you more practice as you prepare for the placement test. If you need help solving these, two videos created by John Grima and Lisa Brown are available at: http://web.gccaz.edu/~johwd63181/

1) Add and simplify (where defined).

a) $\dfrac{y}{y+4} + \dfrac{8y+4}{(y+4)(y-3)}$

b) $\dfrac{z}{z+2} + \dfrac{5-z}{(z+2)(z-5)}$

2) Find the value of $k$ so that the polynomials factor.

a) $x^2 + kx - 21 = (x+7)(x-3)$

b) $x^2 + kx + 30 = (x-6)(x-5)$

3) Solve the absolute value equations.

a) $\left|2x+10\right| = 16$

b) $\left|8-3x\right| = 2$

4) Find the value of $y$ in the solution of the system of equations.

a) $\begin{cases} 4x + y = 8 \\ \phantom{4}x - y = 12 \end{cases}$

b) $\begin{cases} x + y = 8 \\ x - y = 12 \end{cases}$

5) Find the value of $x$ for the following determinant equations.

a) $\begin{vmatrix} 2 & 5 \\ x & -1 \end{vmatrix} = 8$

b) $\begin{vmatrix} x & 4 \\ -3 & 3 \end{vmatrix} = 24$

6) Write as a single logarithm.

a) $3\log_2 x - 4\log_2 y$

b) $5\log_3 x + 2\log_3 z$

7) If $a < b$ and $f(x)$ is the given exponential function, then is $f(a) < f(b)$? Answer yes or no.

a) $f(x) = 2^{-x}$

b) $f(x) = 2^x$

8) What is the largest number of points of intersection between $x + y^3 = 5$ and a quadratic function?

9) What is the largest number of points of intersection between $x + y^3 = 5$ and a cubic function?

10) Find the slopes of the lines described below.

a) $x$-intercept is $(w, 0)$ and passes through the point $(3, t)$.

b) $x$-intercept is $(s, 0)$ and passes through the point $(2, 5)$.

11) Evaluate the following functions. Write your answers as fractions.

a) Find $f(2)$ for $f(x) = 3^{x-3}$.

b) Find $f(-5)$ for $f(x) = 2^{x+2}$.

12) Solve for $t$ and simplify.

    a) $(2x^2y)^4t = 32x^{15}y^7$                        b) $(2x^5y^2)^3t = 24x^{19}y^{10}$

13) Find the requested values for the following symmetric graphs.

    a) The graph of a function is symmetric to the line $x = 3$ and $f(2) = 5$. Find $f(4)$.

    b) The graph of a function is symmetric to the line $x = 6$ and $f(3) = 7$. Find f(9).

14) Sketch graphs of the given functions. Be sure to find and label the $x$-intercept and one other point on the graph.

    a) $f(x) = \log_3(x)$                        b) $f(x) = \log_2(x)$

15) Find the simplified value of the following expressions.

    a) $25^{3/2}$                                b) $27^{2/3}$

16) Solve the inequalities. Write your answer as an inequality.
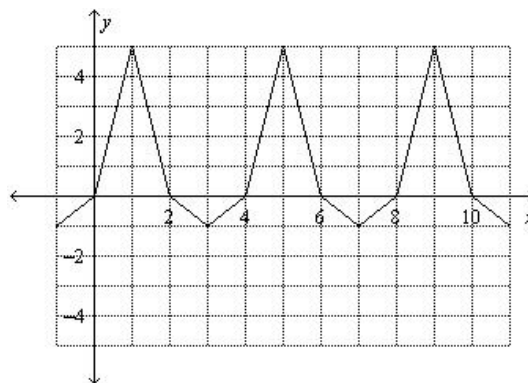
    a) $3x - 10 < 5x + 6$                    b) $12 - 4x > 8x + 24$

17) The period of the graph of the function $f(x)$ shown is 4. Use this knowledge to answer the questions.

    a) Determine $f(17)$.

    b) Determine $f(15)$.



18) Use the Binomial Expansion Theorem to find the following.

    a) Find the 4th term in the expansion of $(x + 3)^5$.

    b) Find the 2nd term in the expansion of $(x + 2)^4$.

19) Assume that $-5 < x < -3$. Determine an equivalent algebraic expression (that does not contain the absolute value sign) for the given absolute value expression.

   a) $|x + 1|$

   b) $|x - 3|$

20) Assume that $x$ is an acute angle to determine the value of following trigonometric expressions.

   a) Given that $\cos^2(x) = \frac{1}{2}$, find $\cos(2x)$.

   b) Given that $\sin^2(x) = \frac{1}{2}$, find $\sin(2x)$.

21) Use the given information to find the value of the logarithms.

   a) If $\log(y) = 5$ and $\log(x) = 2$, find $\log(x^3 y)$.

   b) If $\log(y) = 3$ and $\log(x) = 4$, find $\log(x^2 y^3)$.

22) Assume $0° \le x \le 90°$ to solve the following trigonometric equations.

   a) $\sin(50°) = \cos(x)$

   b) $\tan(20°) = \cot(x)$

23) Find all solutions, both real and imaginary for the following equations.

   a) $x^3 + 8 = 0$

   b) $x^3 - 27 = 0$

## <u>GCC Review for College-Level Accuplacer Placement Test Answers</u>

1a) $\frac{y+1}{y-3}$

1b) $\frac{z-1}{z+2}$

2a) $k=4$

2b) $k=-11$

3a) $x=3,-13$

3b) $x=2,\frac{10}{3}$

4a) $y=-8$

4b) $y=-2$

5a) $x=-2$

5b) $x=4$

6a) $\log_2 \dfrac{x^3}{y^4}$

6b) $\log_3 x^5 z^2$

7a) No

7b) Yes

8) 6 times

9) 9 times

10a) $\frac{t}{3-w}$

10b) $\frac{5}{2-s}$

11a) $f(2)=\frac{1}{3}$

11b) $f(-5)=\frac{1}{8}$

12a) $2x^7y^3$

12b) $3x^4y^4$

13a) $f(4)=5$

13b) $f(9)=7$

14a) see graph below

14b) see graph below

15a) 125

15b) 9

16a) $x>-8$

16b) $x<-1$

17a) $f(17)=5$

17b) $f(15)=-1$

18a) $270x^2$

18b) $8x^3$

19a) $-x-1$

19b) $-x+3$

20a) 0

20b) 1

21a) 11

21b) 17
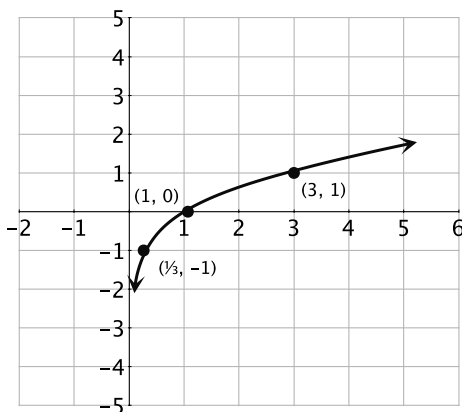
22a) $40°$

22b) $70°$

23a) $-2, 1\pm\sqrt{3}i$

23b) $3, \dfrac{-3\pm3\sqrt{3}i}{2}$

14a)



14b)