12th Grade Assignment – Week #2

Group Assignment:

for Tuesday

- *Cartesian Geometry Practice*.

  (1) **Graph each one**. See how far you can get in 15 minutes in your group meeting, so that you still have time for #2.

  a) $y + x = 4$

  b) $x + 3y = 15$

  c) $(x-5)^2 + (y+2)^2 = 13$

  d) $y = 2x^2 - 20x + 43$

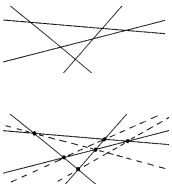
  e) $y = -x^3 + \frac{1}{2}x^2 + 2x + 4$ (You could do this only with a table, but try first to graph it without the "4".)

  (2) Using the above graphs, find the points of intersection between…

  - **a** and **b**
  - **a** and **c**
  - **a** and **d**
  - *Challenge!* **c** and **d**
  - *Challenge!* **e** and **b** (Hint: One of the points is at $x = -1.5$)

for Thursday

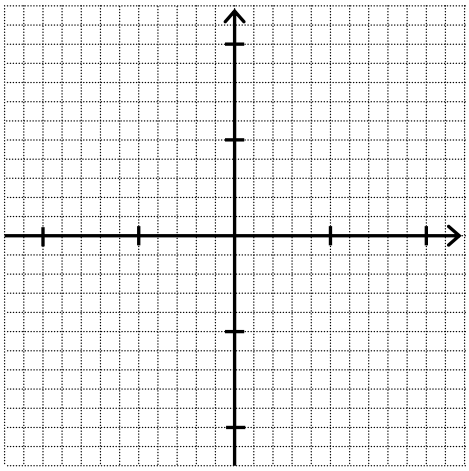
(3) *Lines and Points.* Draw 4 lines on a page, as shown here, such that they all intersect on the page, but no three lines are coincident. Fairly easily, we can see that 6 points of intersection are formed, and that, from these 6 points, 3 new lines can be drawn (by connecting any two of the 6 points). Starting instead with 10 lines on the page, how many points of intersection are there, and how many new lines can then be drawn using any two of these points of intersection?

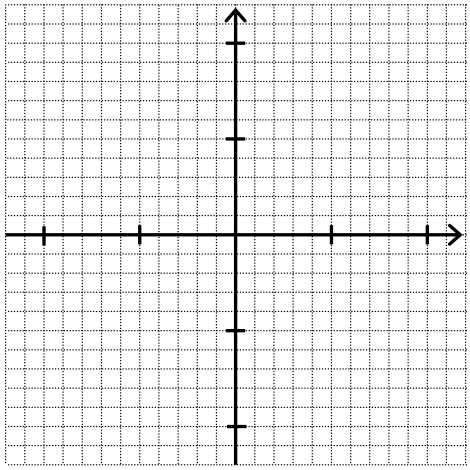


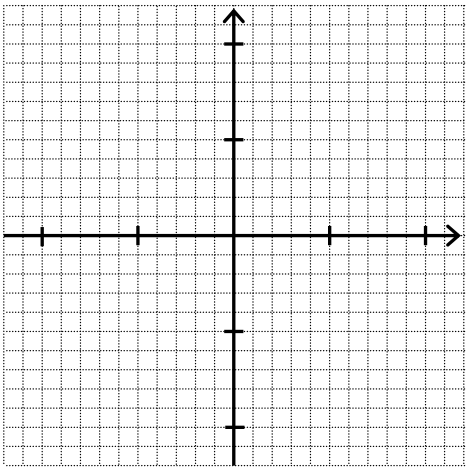
(4) *Factorial Puzzle.* recall that 5! means $5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$, which equals 120. Factorials certainly get large very quickly. If you were to multiply out 4273!, how many zeroes would it end in?

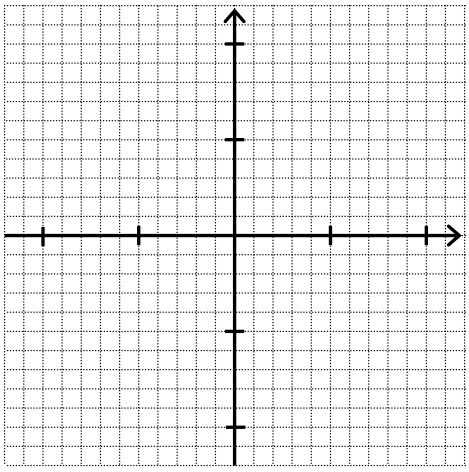
Individual Work

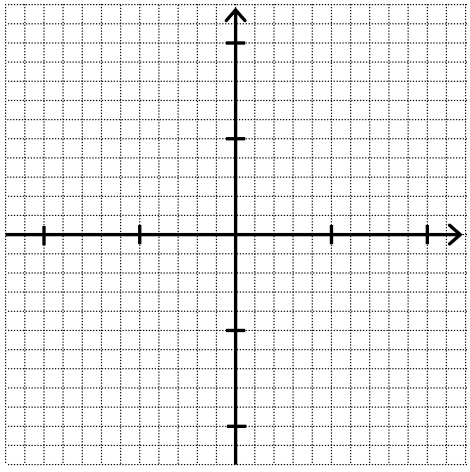
- Again, your major task is to prepare for the *11th Grade Review Test*. (See the *Week #1 Assignment* for suggestions on how to prepare for this test.) The test is found at the end of this document. You should take this test before the end of Week #3.

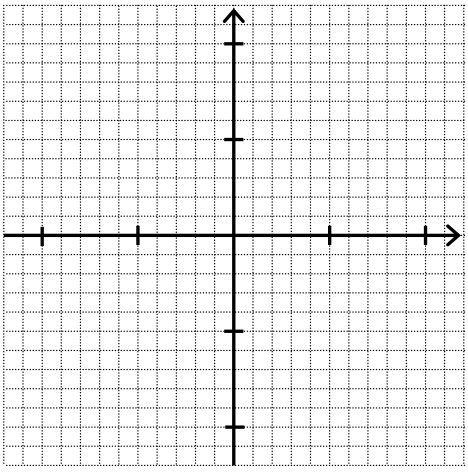


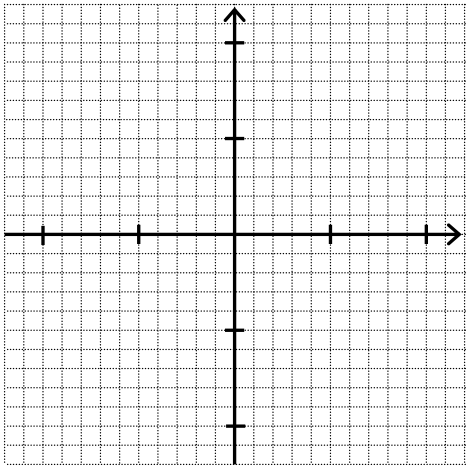


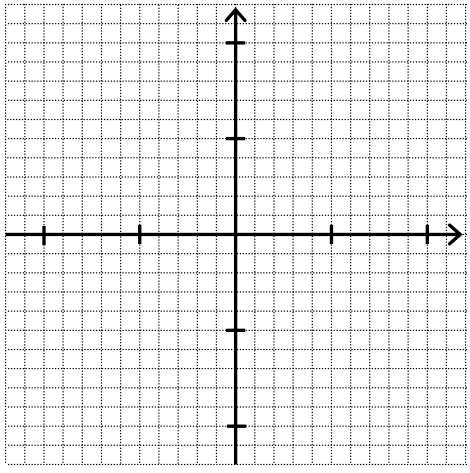


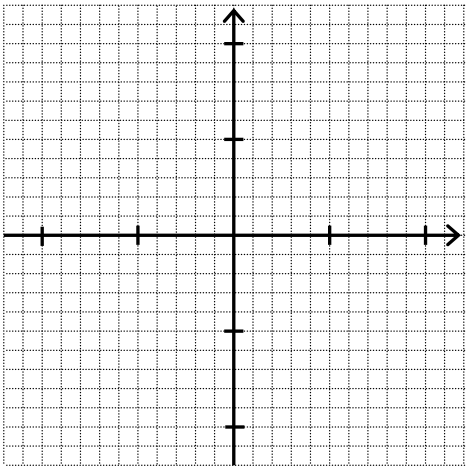












11th Grade Review Test

(Start of the 12th Grade Year.)

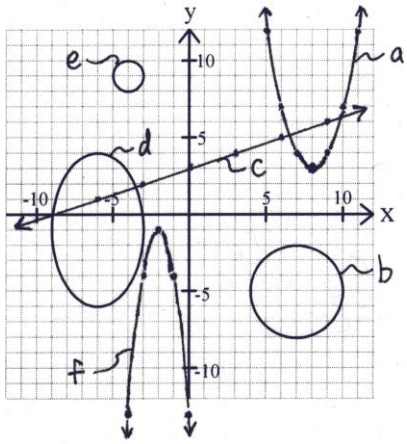
Note: Neither calculators nor notes may be used on this test!!

1) Give the equations of the graphs a, b, c, as given below. (Ignore d, e, f)

a)

b)

c)



2) Give two solutions to the equation you gave as an answer to #1a, above.

3) Graph each of the following on the graphs below. Make sure you label each one.

a) $y = \frac{2}{3}x - 7$

b) $x^2 + y^2 = 4$

c) $\frac{(x-3)^2}{16} + (y+2)^2 = 1$

d) $3x - 2y = 12$

e) $x = -y^2 + 6y - 9$

4) Give the x and y-intercepts of the graph of the equation given in #3a.

5) Simplify each:

a) $250{,}000^{-\frac{1}{2}}$

b) $8^{\frac{5}{3}}$

c) $\log_{10} 1000$

d) $\log_{16}\left(\frac{1}{16}\right)$

e) $\log_5 1$

f) $\log_{27} 81$

g) $\log_3 (81 \cdot 27)$

h) $\log_9 (9^7)$

i) estimate $\log_2 40$

j) estimate $\log_{10} 0.003$

6) Simplify. Where applicable, leave answer in exact (radical) form (e.g., $\sqrt{5}$).

a) $\cos(135°)$

b) $\cot(60°)$

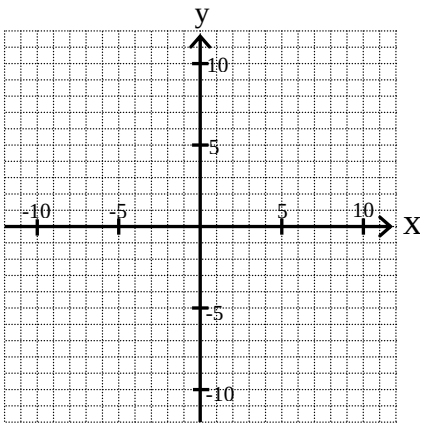
c) $\csc(30°)$

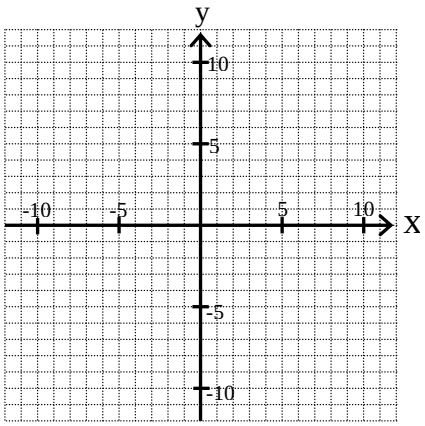
d) $\sin(\frac{5\pi}{2})$

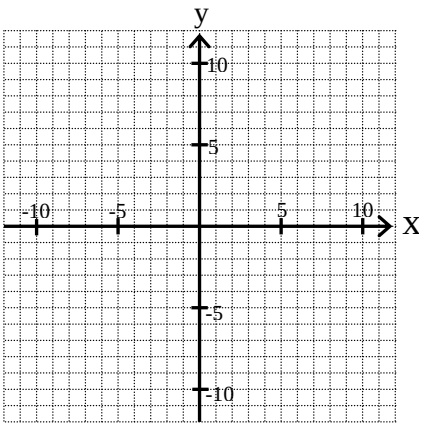
e) $\sec(\frac{5\pi}{6})$

f) $\cot^{-1}(\sqrt{3}) = \theta$
(Give all possible answers in radians, such that $0 \le \theta < 2\pi$)

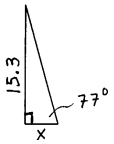
(Please turn over→)



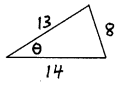




7) Set up the equation that would allow you to solve for X or θ. <u>Do not solve the equation</u>!

a) 

b) 

c) 

8) Give the equation of the line that passes through (–2, 7) and is parallel to the line given by the equation $y + 3x = 7$.

9) Simplify.

a) $(2 + 3i)(6 + 5i)$

b) $(7 - 3i)^2$

c) $\frac{5 + i}{3 + i}$

10) Solve over the set of complex numbers.
$x^4 + 2x^2 - 63 = 0$