M17_LE2_001

Mathematics 17 — College Algebra and Trigonometry
Second Long Examination — First Semester, AY 2012-2013

I. Answer the following questions. *2 points each*

1. If the slopes of the lines l_1 and l_2 are m_1 and m_2, respectively, with $m_1 m_2 = -1$, is $l_1 \perp l_2$ or $l_1 \parallel l_2$?
2. If the slopes of the lines l_1 and l_2 are m_1 and m_2, respectively, with $\frac{m_1}{m_2} = 1$, is $l_1 \perp l_2$ or $l_1 \parallel l_2$?
3. If z varies directly as the square of x and inversely as y, what effect on z does doubling x and doubling y have?
4. What is the solution set of the equation $\frac{a-x}{(x-a)(x-b)} = 0$, where $a, b \in \mathbb{R}$?

II. Find the solution set of the following. *4 points each*

1. $\sqrt{2x+3} - \sqrt{2-2x} = \sqrt{5}$
2. $y^4 - 8y^2 - 9 = 0$
3. $\frac{5}{x-4} + \frac{2}{x+3} \leq 0$

III. Solve the value of z in the system $\begin{cases} x+y+z=18 \\ x-2y+3z=26 \\ -x+y+2z=7 \end{cases}$ *4 points*

IV. Given the system: $\begin{cases} y=-2x-3 \\ y=-x^2-4x-3 \end{cases}$

1. Find the x- and y- intercepts of the line. *1 point*
2. Find the x- and y- intercepts of the parabola. *1 point*
3. Find the vertex of the parabola. *2 points*
4. Determine algebraically the point/s of intersection. *2 points*
5. Sketch the graphs of the two equations on one Cartesian plane. Label the intercepts, the vertex and point/s of intersection. *2 points*

V. Solve the following problems. *4 points each*

1. The sum of the reciprocals of two consecutive integers is $\frac{9}{40}$. What are the integers?
2. Find an equation of the tangent line (in slope-intercept form) to $(x-3)^2 + (y+2)^2 = 25$ at (-1,1).

END OF EXAM