M17_LE1_003

Mathematics 17 — College Algebra and Trigonometry
First Long Examination — First Semester, AY 2011-2012

I. Write TRUE if the statement is always true. Otherwise, write FALSE. *1 point each*

1. The number π is equal to $\frac{22}{7}$.
2. The expression $a(bc)=(ab)c, \forall a,b,c, \in \mathbb{R}$ is justified by associativity axiom for multiplication.
3. For any set $A, A \subset \{A,\{A\}\}$.
4. The product of two irrational numbers is irrational.

II. Factor each of the following polynomials completely. *4 points each*

1. $6z^2(z+2)-(z^2+2z)-12z-24$
2. $a^2-2ab+b^2-x^2-34x-289$
3. $x^3-x^2-125y^3+25y^2$

III. Perform the Long Division Method for polynomials in order to get the quotient and remainder when $4x^5-3x^3-x+10$ is divided by $2x^2+x-1$. *4 points*

IV. Simplify. *4 points each*

1. $\dfrac{\frac{1}{x+1}+\frac{2}{x+2}}{\frac{1}{2}-\frac{2x+3}{x+2}}$
2. $\dfrac{25-9x^2}{a^3+b^3} \div \dfrac{3x^2+7x-20}{a^2+2ab+b^2} \bullet \dfrac{5x+20}{3x+5}$
3. $\left(\dfrac{128d^{14}e^{21}f}{a^7(b+c)^0}\right)^{\frac{3}{7}} \div \left(\dfrac{4b}{a(de)^{-1}}\right)$
4. $\dfrac{(5+i^{-199})(\overline{i^{99}-3})}{(3-i^{199})}$
5. $\sqrt[6]{64a^4b^8}+\sqrt[6]{a^2b^2}-\dfrac{2ab}{\sqrt[3]{a^2b^2}}$

END OF EXAM