Math 98 **Sample Exam 2 - Version B** Answers

1. Perfom the division with remainder: $385 \div 13 =$ 29 R 8
2. List all factors of 60. 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
3. Find the average of $-5,\ 13,\ 0,\ 4,$ and -2 2
4. Simplify each of the following expressions. Show all steps.
   (a) $\sqrt{169} - \sqrt{144} =$ 1
   (b) $\sqrt{169 - 144} =$ 5
   (c) $\left|-2^2 - 3\left(5 - (-3)^2\right)\right| =$ 8
   (d) $\left|-2^2 - 3\left|5 - (-3)^2\right|\right| =$ 16
   (e) $\sqrt{(-1)^4 - 2 \cdot 3^2 \div (-2) \cdot 6 + (-3)^2} =$ 8
   (f) $\left|-3^2 + 3 - \left|(-6)^2 + (-2)^3\right| - 2\right| + 1 =$ 37
   (g) $(-5)^2 - \left|\left|-5^2 - 6\,(-4)\right| - 10\right| =$ 16
   (h) $\left(\left((3-5)^2 - 6\right)^2 - 4\right)^2 - 2 =$ -2
   (i) $\sqrt{-7^2 + 15\,(2)^2 - 18 \div 3 \div 3} =$ 3
   (j) $\dfrac{-2 + 5\left(3 - (-2)^2\right)}{-1^5 - (-1)^5} =$ undefined
   (k) $\dfrac{-6^2 \div 2 \cdot 3 + \left|2^2 \cdot 12 - 11\right| + 2\,(-1)^3 - (-1)^2}{(-2)^2 + (-2)^3} =$ 5
5. Simplify each of the following expressions. Show all steps.
   (a) $x^2 \cdot x^3 =$ x^5
   (b) $\left(x^2\right)^3 =$ x^6
   (c) $\dfrac{x^{10}}{x^2} =$ x^8
   (d) $(2a)^2\, a^3 =$ $4a^5$
   (e) $2a^2a^3 =$ $2a^5$
6. Evaluate each of the following expressions when $a = -6$ and $b = 5$.
   (a) $-a + 2b =$ 16
   (b) $b^2 - a^2 =$ -11
   (c) $2b - 3ab =$ 100
   (d) $\dfrac{b^3 - a^3}{b - a} =$ 31
   (e) $-a - a^2 - a^3 =$ 186

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7. Consider the equation $x^3 - x^2 - 6(x-1) = -x + x^2$. In case of each number given, determine whether it is a solution of the equation or not.

   (a) $x = 0$ $6 \neq 0$ no
   (b) $x = 1$ $0 = 0$ yes
   (c) $x = -1$ $10 \neq 2$ no
   (d) $x = 2$ $-2 \neq 2$ no
   (e) $x = -2$ $6 = 6$ yes
   (f) $x = 3$ $6 = 6$ yes
   (g) $x = -3$ $-12 \neq 12$ no

8. Consider the graph of the equation $x^2 - 2y^2 + y + 15 = -5x$. For each point given, determine if it is on the graph of the equation or not.

   (a) $(0, 3)$ yes
   (b) $(1, -2)$ no
   (c) $(1, -3)$ yes

9. Two angles in a triangle are $\alpha = 38°$ and $\gamma = 67°$.

   (a) Find the measure of the third angle, β. $75°$
   (b) Which side is shortest in the triangle? a