

Name _____
 Algebra 2: Review Worksheet A
 First Semester Final

Period _____

Date _____
 Topics 1-5
 2008-2009

Directions: Calculators are not allowed. Express any negative square roots in terms of i .

A2-1 1) Solve for x . $|2x - 3| = 10$ A2-1 2) Solve for x . $|6 - 3x| \geq 9$

A2-1 3) Find the solution set to the inequality $\left|\frac{4x-2}{5}\right| \leq 2$.

A2-1 4) Sketch the interval in the real number line that is the solution for $|x + 2| > 5$.

A2-2 5) Solve the system $\begin{cases} y = 4x - 3 \\ 3x - y = 7 \end{cases}$ for x only.

A2-2 6) Solve the system $\begin{cases} -2x - 4y = -4 \\ 4x - y = -10 \end{cases}$ for y only.

A2-2 7) Find the solution to the following system of equations: $\begin{cases} x - 3y + 2z = 5 \\ 2x - 6y + 4z = 10 \\ x + 2y - z = -2 \end{cases}$

A2-2 8) Solve the following system of equations for x only: $\begin{cases} 2x + y = -3 \\ x - z = -6 \\ 3y + z = 7 \end{cases}$

A2-2 9) Carnations cost \$5 a bunch, and daisies cost \$3 a bunch. If Luis buys 10 bunches of these flowers and spends \$46, how many bunches of carnations did Luis buy?

A2-2 10) Solve the following system graphically: $\begin{cases} x + y = -3 \\ y = x - 5 \end{cases}$

A2-2 11) Solve the following system of inequalities: $\begin{cases} x + 2y \leq -2 \\ y \geq \frac{1}{2}x \\ x \geq -2 \end{cases}$

A2-6 12) If $i = \sqrt{-1}$, find $7i(5i)$.

A2-6 13) What is the product of the complex number $(8 + i)$ and $(8 - i)$.

A2-5 14) If $i = \sqrt{-1}$, what is the value of i^{15} ?

A2-6 15) Find the sum: $(8 - 3i) + (2 + 6i)$

A2-6 16) Find the difference: $(7 - i) - (4 - 5i)$

A2-6 17) Simplify $\frac{5}{3+i}$. Express your answer as a single fraction.

- A2-6 18) Write $\frac{2-3i}{4+2i}$ in the form of $a + bi$, where a and b are real numbers.
- A2-5 19) If $i = \sqrt{-1}$, graph the complex number $-4 - 3i$.
- A2-8 20) What are the solutions to the equation $x^2 + 2x + 26 = 0$?
- A2-8 21) What are the solutions to the equation $3x^2 - 3 = 45$?
- A2-8 22) What are the solutions to the equation $x^2 + 49 = 0$?
- A2-8 23) What are the solutions to the equation $x^2 = 9x$?
- A2-10 24) What are the x -intercepts of the graph of $y = 6x^2 + x - 2$?
- A2-10 25) What are the zeros of the function $f(x) = x^2 + 5x - 24$?
- A2-8 26) Find two numbers with the following properties.
 1) The second number is 5 more than the first number.
 2) The product of the two numbers is 7 less than their sum.
- A2-10 27) Determine the maximum value of the function $f(x) = -2(x - 7)^2 + 4$.
- A2-10 28) What is the minimum point of $y = x^2 - 6x + 1$?
- A2-9 29) Find the vertex point of the graph $y = 6(x + 1)^2 - 9$.
- A2-9 30) How does the value of " a " affect the thickness of the graph of $y = ax^2$ as compared to the graph of $y = x^2$?
- A2-9 31) Describe the translation of the graph of $y = (x + 5)^2 - 1$ to the graph of $y = (x - 4)^2 + 6$.
- A2-9 32) Which of the following sentences is true about the graphs of $y = 3(x + 4)^2 - 1$ and $y = 3(x + 4)^2 + 2$?
- A) Their vertices are maximums.
 B) The graphs have the same shape with different vertices.
 C) The graphs have different shapes with different vertices.
 D) One graph has a vertex that is a maximum, while the other graph has a vertex that is a minimum.
- A2-9 33) The function $f(x) = (x - b)^2 + c$ is a parabola that opens upward with a minimum at the vertex point $(-4, 5)$. Use this information to find the constants b and c .
- A2-10 34) Write the equation $y = 3x^2 - 18x + 2$ in the completed square form:
 $y = a(x - h)^2 + k$
- A2-10 35) Sketch a graph of $y = 2(x - 4)^2 - 3$.

A2-12 36) Simplify. $49^{-\frac{1}{2}}$

A2-12 37) Simplify. $64^{\frac{2}{3}}$

A2-12 38) Simplify. $\frac{2^{\frac{2}{3}}}{2^{-\frac{1}{5}}}$

A2-12 39) Simplify. $8^{\frac{7}{8}} \cdot 8^{\frac{1}{2}}$

A2-12 40) Simplify. $\frac{1}{n^{-4}}$

A2-12 41) Simplify. $(-27)^{\frac{4}{3}}$

A2-12 42) Simplify. $\left(12^{\frac{1}{3}}\right)^{\frac{3}{4}}$

A1-2 43) Simplify. $\sqrt[3]{54x^{11}}$

A2-7 44) Simplify. $\frac{5a^4b^2c^{-2}}{(a^2bc^{-3})^3}$

A2-7 45) Simplify. $\frac{20x^{-4}}{9y^6} \div \frac{4x^{-2}}{18y^{-1}}$

A1-2 46) Simplify. $(2x^4y^{-2})^{-3}$

A1-2 47) Simplify. $(-4x^5y^0)^2(2x^{-3}y^2)$

A2-12 48) If the equation $y = (6)^x$ is graphed, which of the following values of x would produce a point furthest from the x -axis?

- A) -2.7 B) $-\frac{1}{2}$ C) $\frac{7}{2}$ D) $5\frac{1}{4}$

A2-12 49) Suppose a certain radioactive element decays over time according to the equation $y = A\left(\frac{1}{3}\right)^{\frac{t}{400}}$, where A = number of grams present initially and t = time in years. If 4500 grams were present initially, how many grams will remain after 800 years?

A2-12 50) Bacteria in a culture are growing exponentially with time, as shown in the table below.

Bacteria Growth

Day	Bacteria
0	300
1	600
2	1200

Which of the following equations expresses the number of bacteria, y , present at any time, t ?

- A) $y = 300 + 2^t$ B) $y = (300) \cdot (2)^t$ C) $y = (300) \cdot (3)^t$ D) $y = (300) \cdot (2)^{2t}$