N: D: P: 1 2 3 4 5 6

Algebra 2 // **BM 4 Review A** *Mission Hills Math 2013*

Directions: Calculators are not allowed.

A2-1 1) Solve for x. $|5-10x| = 25$

A2-2 2) Solve the system of equations shown below for y only.

$$\begin{cases} 2x+3y+z=5 \\ 3x+3y-z=-1 \\ 3x+2y-z=0 \end{cases}$$

A2-2 3) A restaurant manager bought 10 packages of bagels. Some packages contained 6 bagels each, and the rest contained 8 bagels each. There were 68 bagels in all. How many packages of 8 bagels did the manager buy?

A2-2 4) Solve the system of inequalities: $\begin{cases} 3x+2y>-6 \\ y \le 2x-1 \end{cases}$

A2-6 5) If i = $\sqrt{-1}$, find 8i(5i).

A2-6 6) What is the product of the complex numbers (4 + i) and (4 – i)?

A2-5 7) If i = $\sqrt{-1}$, what is the value of i^6?

A2-6 8) What is an equivalent form of $\frac{2}{4+i}$?

A2-5 9) Sketch a graph of the complex number 5 – 3i.

A2-8 10) What are the solutions to the equation $x^2+2x+10=0$?

A2-10 11) What are the x-intercepts of the graph of $y=8x^2-2x-1$?

A2-10 12) Which ordered pair is the vertex of $y = x^2-4x+5$?

A2-8 13) There are two numbers with the following properties.

1) The second number is 3 more than the first number.
2) The product of the two numbers is 17 more than their sum.

Find the possible values of these two numbers?

A2-9 14) Describe the translation of the graph $y=(x-4)^2+1$ to the graph of $y=(x+6)^2-3$?

A2-9 15) Which of the following sentences is true about the graphs of $y = -3(x+4)^2 - 1$ and $y = 2(x+4)^2 - 1$?

A) Their vertices are minimums.
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.

A2-10 16) Cynthia is solving the equation $x^2 - 6x = 5$ by completing the square. What number should be added to both sides of the equation to complete the square?

A2-7 17) Simplify. $\frac{a^2b^5c^{-3}}{(ab^4c^{-2})^3}$

A2-7 18) Simplify. $\frac{30x^{-6}}{7y^3} \div \frac{5x^{-2}}{14y^{-1}}$

A2-12 19) If the equation $y = (\frac{1}{4})^x$ is graphed, which of the following values of x would produce a point furthest from the x-axis?

A) $\frac{1}{3}$ B) $\frac{7}{5}$ C) $\frac{9}{4}$ D) $\frac{11}{2}$

A2-10 20) Sketch a graph of $y = -3(x-2)^2 + 4$.

A2-12 21) Suppose a certain radioactive element decays over time according to the equation $y = A(\frac{1}{2})^{\frac{t}{300}}$, where A = number of grams present initially and t = time in years. If 1600 grams were present initially, how many grams will remain after 900 years?

A2-12 22) Bacteria in a culture are growing exponentially with time, as shown in the table below.

Bacteria Growth

Day	Bacteria
0	100
1	400
2	1600

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

A) $y = 100 + 4^t$ B) $y = (400) \bullet (2)^t$
C) $y = (400) \bullet (4)^t$ D) $y = (100) \bullet (4)^t$

A2-18 23) A three-person committee is chosen at random from a group of 8 people. How many different committees are possible?

A2-18 24) A train is made up of a locomotive, 5 different cars, and a caboose. If the locomotive ways can the train be ordered?

PS-2 25) A box contains 6 large white marbles, 3 large black marbles, 5 small white marbles, and 4 small black marbles. If a marble is drawn at random, what is the probability that it is white, given that it is one of the big marbles?

A2-19 26) Laura and Sam are among 6 students who have qualified for a prize. Two students from the group of six will be selected at random to win prizes. What is the probability that both Laura and Sam will be the 2 students selected?

A2-18 27) How many 5-letter permutations can be made from the letters in the word **"SASSY"**?

PS-7 28) Ben has taken 4 tests in his English class. He has received the following scores. 72, 80, 75, 78

If the mean of these scores is approximately 76, what is the population standard deviation for these scores? (Round the answer to the nearest tenth.)

A) 1.7 B) 3.0 C) 6.1 D) 9.3

PS-7 29) 4, 2, 3, 1, 3, 5

Bill found the mean and standard deviation of the set of numbers given above. If he adds 3 to each number, which of the following will result?

A) The mean will be multiplied by 3.
B) The standard deviation will increase by 3.
C) The mean will not change.
D) The standard deviation will not change.

A2-18 30) Les wants to create a 5-character password. The first 3 characters must be a letter from his first name, and the last 2 characters must be a digit from the number 9381. How many different passwords are possible? Repetition of letters and digits is **NOT** allowed.

PS-1 31) A teacher is randomly handing out 8 graphing calculators and 6 scientific calculators. What is the probability that the first calculator he hands out will be a graphing calculator and the second calculator that he hands out will be a scientific calculator?

PS-7 32) There is a 60% chance that it will rain Friday and a 20% chance that it will rain on Saturday. What is the probability that it will **NOT** rain on either of the two days?

A2-11.1 33) Write the equation $\log_{\frac{1}{16}} 2 = x$ in exponential form.

A2-11.2 34) Which is the first ***incorrect*** step in simplifying $\log_4 \frac{4}{64}$?

Step 1: $\log_4 \frac{4}{64} = \log_4 4 - \log_4 64$

Step 2: $= 1 - 16$

Step 3: $= -15$

A2-13 35) Express $\log_5 50$ as a quotient of common logarithms.

A2-14 36) What is the value of $\log_3 81$?

A2-14 37) If $\log 3 \approx 0.477$ and $\log 5 \approx 0.699$, what is the approximate value of $\log 75$?

A2-11.1 38) If $\log_2 x = -3$, what is the value of x?

A2-13 39) What is the solution to the equation $8^x = 40$? Express your answer as a quotient of common logarithms.

A2-14 40) Expand $\ln \frac{a^6}{5b^3}$ as much as possible.

A2-14 41) Condense the expression: $\log_3 40 - 3\log_3 2 + \log_3 x$

A2-11.1 42) Solve for x: $\log_5 (x+4) = 2$

A2-11.1 43) Solve for x: $\log_2 7 + \log_2 x = 4$