Algebra 2 CST Mixed Review B Name_____
SHOW WORK. No calculators!

51 $4x^2 - 5y^2 - 16x - 30y - 9 = 0$

What is the standard form of the equation of the conic given above?

A $\frac{(x-4)^2}{11} - \frac{(y-3)^2}{4} = 1$

B $\frac{(y+3)^2}{4} - \frac{(x-2)^2}{5} = 1$

C $\frac{(y-3)^2}{6} - \frac{(x+2)^2}{9} = 1$

D $\frac{(x-4)^2}{11} + \frac{(y-3)^2}{4} = 1$

61 **A certain radioactive element decays over time according to the equation** $y = A\left(\frac{1}{2}\right)^{\frac{t}{300}}$, **where A = the number of grams present initially and t = time in years. If 1000 grams were present initially, how many grams will remain after 900 years?**

A 500 grams
B 250 grams
C 125 grams
D 62.5 grams

69 **If $\log 2 \approx 0.301$ and $\log 3 \approx 0.477$, what is the approximate value of log 72?**

A 0.051
B 0.778
C 0.861
D 1.857

81 $(3y-1)^4 =$

A $81y^4 - 108y^3 + 54y^2 - 12y + 1$
B $81y^4 + 108y^3 - 54y^2 - 12y + 1$
C $81y^4 - 54y^3 - 108y^2 - 12y + 1$
D $81y^4 + 54y^3 - 108y^2 - 12y + 1$

85 **What is the sum of the infinite geometric series**

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \ldots ?$$

A 1
B 1.5
C 2
D 2.5

86 **What is the nth term in the arithmetic series below?**

$$3 + 7 + 11 + 15 + 19 \ldots$$

A $4n$
B $3 + 4n$
C $2n + 1$
D $4n - 1$

87 Which expression represents $f(g(x))$ if $f(x) = x^2 - 1$ and $g(x) = x + 3$?

A $x^3 + 3x^2 - x - 3$

B $x^2 + 6x + 8$

C $x^2 + x + 2$

D $x^2 + 8$

89 If $f(x) = x^2 + 2x + 1$ and $g(x) = 3(x+1)^2$, which is an equivalent form of $f(x) + g(x)$?

A $x^2 + 4x + 2$

B $4x^2 + 2x + 4$

C $4x^2 + 8x + 4$

D $10x^2 + 20x + 10$

96

3, 6, 2, 1, 7, 5

James found the mean and standard deviation of the set of numbers given above. If he adds 5 to each number, which of the following will result?

A The mean will be multiplied by 5.

B The standard deviation will increase by 5.

C The mean will not change.

D The standard deviation will not change.

83 What are the first 4 terms in the expansion of $(1 + 2x)^6$?

A $1 + 12x + 30x^2 + 40x^3$

B $1 + 12x + 24x^2 + 48x^3$

C $1 + 12x + 30x^2 + 120x^3$

D $1 + 12x + 60x^2 + 160x^3$

80 Teresa and Julia are among 10 students who have applied for a trip to Washington, D.C. Two students from the group will be selected at random for the trip. What is the probability that Teresa and Julia will be the 2 students selected?

A $\frac{1}{45}$ **C** $\frac{1}{5}$

B $\frac{2}{45}$ **D** $\frac{2}{5}$

91 On a certain day the chance of rain is 80% in San Francisco and 30% in Sydney. Assume that the chance of rain in the two cities is independent. What is the probability that it will *not* rain in either city?

A 7%

B 14%

C 24%

D 50%