Date Completed: _____
Mentor Initials: _____

Backsolving

1. Which of the following is a solution to the equation $3(x-1)^2 + 2x - 2 = 0$?

A) $x = -1$

B) $x = -\frac{1}{3}$

C) $x = 0$

D) $x = \frac{1}{3}$

2. As part of her architecture homework, Suzanne found the area and perimeter of her dorm room. She found that the area of her rectangular dorm room was 432 feet and the perimeter was 84 feet. Before turning in her assignment, she realized that she did not write down the dimensions of the room. What are the dimensions of Suzanne's living room, in feet?

A) 12×32
B) 12×36
C) 16×27
D) 18×24

3. Which of the following (x, y) pairs is a solution to the equations $x + y = 3$ and $3x + 2y = 7$?

A) $(1, 1)$
B) $(1, 2)$
C) $(2, 1)$
D) $(2, 2)$

4. A function $f(x)$ is defined as $f(x) = 4^{x^2-2x-3}$. What 2 real numbers satisfy $f(x) = 1$?

A) -3 and 3
B) -3 and 0
C) -1 and 3
D) -1 and 0

5. For what value of x is the equation $\sqrt{x} + \sqrt{16} = \sqrt{49}$ true?

A) 3
B) 4
C) 9
D) 33

6. The depth of a swimming pool is 8 feet and is being reduced by 2 inches per day. The depth of a second swimming pool is 7 feet and is being reduced by 1 inch per day. If the depths of both swimming pools continue to be reduced at these constant rates, in approximately how many days will the pools have the same depths?

A) 1
B) 6
C) 8
D) 12

7. $$\sqrt{x} = x - 2$$

What are all values of x that satisfy the above equation?

I. 1
II. 4

A) I only
B) II only
C) I and II
D) Neither I nor II

8. $$\sqrt{x-5} = 5 - \sqrt{x}$$

If x is the solution to the equation above, what is the value of $\sqrt{x-5}$?

A) $\sqrt{\frac{5}{2}}$
B) 2
C) $\sqrt{5}$
D) 9

9. $$b(-5x - 1) + x = 11x - 3$$

The equation above has no solutions, and b is a constant. What is the value of b ?

A) $-\frac{11}{5}$
B) -3
C) -2
D) 0

10. A bag contains 44 blue marbles, 36 purple marbles, and 18 white marbles. How many blue marbles must be subtracted from the 98 marbles already in the bag so that the probability of randomly drawing a blue marble is $\frac{4}{13}$?

A) 10
B) 15
C) 20
D) 25

11. The ESM office auditorium has 216 seats, which are all arranged in rows. The number of seats in each row is 6 less than the number of rows. How many rows of seats are in the auditorium?

A) 9
B) 12
C) 18
D) 36

12. Which of the following is a solution to the equation $\sqrt{3x-27}+3=x$?

I. -3
II. 1

A) I only
B) II only
C) I and II
D) None of the above

13. $$\frac{x-2}{2}=\frac{x+2}{3}$$

What is the solution to the equation shown above?

A) -2
B) 0
C) 2
D) 10