Accelerated Pre-Calculus
Solving Multivariable Systems QC - A

Name _____
Date _____ **Block** _____

Calculator use is allowed; you may not use a calculator with matrix operations. Show all work and write your answer on the line!

1. Use substitution to solve the system of equations.

$x + 2y - z = -3$
$-2x + y - 3z = -9$
$y = -2z + 3$

① $x + 2(-2z+3) - z = -3$
$x - 4z + 6 - z = -3$
$x - 5z = -9$

② $-2x - 2z + 3 - 3z = -9$
$-2x - 5z = -12$

③ $x - 5z = -9$
$-2x - 5z = -12$
$-x + 5z = 9$
$-3x = -3$
$x = 1$

④ $1 - 5z = -9$
$-5z = -10$
$z = 2$

⑤ $y = -2(2) + 3$
$= -1$

Answer: $(1, -1, 2)$

2. Solve using elimination.

$$\begin{aligned} x+y-z&=11\\ 2x+2y-3z&=28\\ 4x-y+5z&=-20 \end{aligned}$$

$x+y+6=11$

$x+y=5$

① $2x+2y-3z=28$

$-2x-2y+2z=-22$

$-z=6$

$z=-6$

② $x+y-z=11$

$4x-y+5z=-20$

$5x+4z=-9$

③ $5x+4z=-9$

$5x+4(-6)=-9$

$5x=-9+24$

$5x=15$

$x=3$

④ $3+y+6=11$

$y=2$

Answer: $(3, 2, -6)$

Accelerated Pre-Calculus
Solving Multivariable Systems QC - B

Name _____
Date _____ **Block** _____

Calculator use is allowed; you may not use a calculator with matrix operations. Show all work and write your answer as an ordered-triple on the line!

1. Use elimination to solve the system of equations.

$$x + y - z = 14$$
$$2x + 2y - 3z = 35$$
$$4x - y + 5z = -22$$

① $x + y - z = 14$
$4x - y + 5z = -22$

$5x + 4z = -8$

② $-2x - 2y + 2z = -28$
$2x + 2y - 3z = 35$

$-z = 7$

$z = -7$

③ $5x + 4(-7) = -8$

$5x = -8 + 28$

$5x = 20$

$x = 4$

④ $4 + y + 7 = 14$

$y = 3$

Answer: $(4, 3, -7)$

2. Use substitution to solve the system of equations.

A $x + 2y - z = 5$
B $-2x + y - 3z = 0$
C $y = -2z - 1$

C → A ① $x + 2(-2z - 1) - z = 5$
$x - 4z - 2 - z = 5$
$x - 5z = 7$

C → B ② $-2x - 2z - 1 - 3z = 0$
$-2x - 5z = 1$

③ $2(x - 5z) = 7(2)$
$-2x - 5z = 1$
$2x - 10z = 14$
$-15z = 15 \rightarrow z = -1$

③ $x - 5(-1) = 7$
$x + 5 = 7 \rightarrow x = 2$

④ $y = -2(-1) - 1$
$y = 1$

Answer: $(2, 1, -1)$