Find the value of w in the following equations:

3x – 2y + w = 11

x + 5y – 2w = -9

2x + y -3w = -6

A. 3

B. 2

C. 4

D. -2

Problem 8: EE Board October 1993

Solve for the value of x.

2x – y + z = 6

x- 3y – 2z = 13

2x – 3y – 3z = 16

A. 4

B. 3

C. 2

D. 1

Problem 9: ME Board October 1996

Solve the simultaneous equations:

x + y = – 4

x + z – 1 = 0

y + z + 1 = 0

A. x = -1, y = -5, z = 3

B. x = 1, y = 2, z = -3

C. x = -1, y = -3, z = 2

D. x = -2, y = -3, z = -1

Problem 10: EE Board April 1997

Multiply the following: (2x + 5y)(5x – 2y)

A. $10x^2 - 21xy + 10y^2$

B. $-10x^2 + 21xy + 10y^2$

C. $10x^2 + 21xy - 10y^2$

D. $-10x^2 - 21xy - 10y^2$

Problem 11: EE Board March 1998

Determine the sum of the positive valued solution

to the simultaneous equations:

xy = 15, yz = 35, zx = 21.

A. 16

B. 13

C. 17

D. 19

Problem 12: ECE Board April 1991

Simplify:

$$\frac{(x^2y^3z^{-2})^{-3}(x^{-3}yz^3)^{-\frac{1}{2}}}{(xyz^{-3})^{-\frac{5}{2}}}$$

A. $\frac{1}{x^2y^7z^5}$

B. $\frac{1}{x^2y^7z^3}$

C. $\frac{1}{x^2y^5z^7}$

D. $\frac{1}{x^5y^7z^2}$

$$\left\{10\left[\frac{A}{x}+\frac{A}{y}\right]=A\right\}\frac{1}{10A}$$

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{10}$$

$$\frac{1}{y}=\frac{1}{10}-\frac{1}{x}$$ ☞ ❶

$$\left\{2\left[\frac{3A}{x}-\frac{4A}{y}\right]=A\right\}\frac{1}{A}$$

$$\frac{6}{x}-\frac{8}{y}=1$$ ☞ ❷

3.

Substitute, (1) in (2):

$$\frac{6}{x}-8\left(\frac{1}{10}-\frac{1}{x}\right)=1$$

$$\frac{6}{x}-\frac{8}{10}+\frac{8}{x}=1$$

$$\frac{14}{x}=1+\frac{8}{10}=\frac{18}{10}$$

$$x=\frac{140}{18}=\frac{70}{9}$$

$$x-4y+2=0$$

$$x=4y-2$$ ☞ ❶

$$2x+y-4=0$$ ☞ ❷

4.

Substitute (1) in (2):

$$2(4y-2)+y-4=0$$

$$8y-4+y-4=0$$

$$9y=8$$

$$y=\frac{8}{9}$$

$$x=4y-2$$

$$x=4\left[\frac{8}{9}\right]-2=\frac{32}{9}-2=\frac{14}{9}$$

$$4x+2y=5$$

$$y=\frac{5}{2}-2x$$ ☞ ❶

$$13x-3y=2$$ ☞ ❷

Substitute (1) in (2):

$$13x-3\left(\frac{5}{2}-2x\right)=2$$

5.

$$19x=2+\frac{15}{2}=\frac{19}{2}$$

$$x=\frac{19}{2(19)}=\frac{1}{2}$$

$$y=\frac{5}{2}-2\left(\frac{1}{2}\right)=\frac{3}{2}$$

$$\left(2x^2-3y^2=6\right)3$$

$$6x^2-9y^2=18$$ ☞ ❶

$$\left(3x^2+2y^2=35\right)2$$

$$6x^2+4y^2=70$$ ☞ ❷

6.

Subtract (1) from (2):

$$6x^2+4y^2-\left(6x^2-9y^2\right)=70-18$$

$$13y^2=52$$

$$y=\pm2$$

$$6x^2-9(2)^2=18$$

$$6x^2=54$$

$$x=\pm3$$

$$3x-2y+w=11$$ ☞ ❶

$$x+5y-2w=-9$$ ☞ ❷

$$2x+y-3w=-6$$ ☞ ❸

7.