

Final Unit 3 Test A

Quality - Accuracy - Transfer - 100%

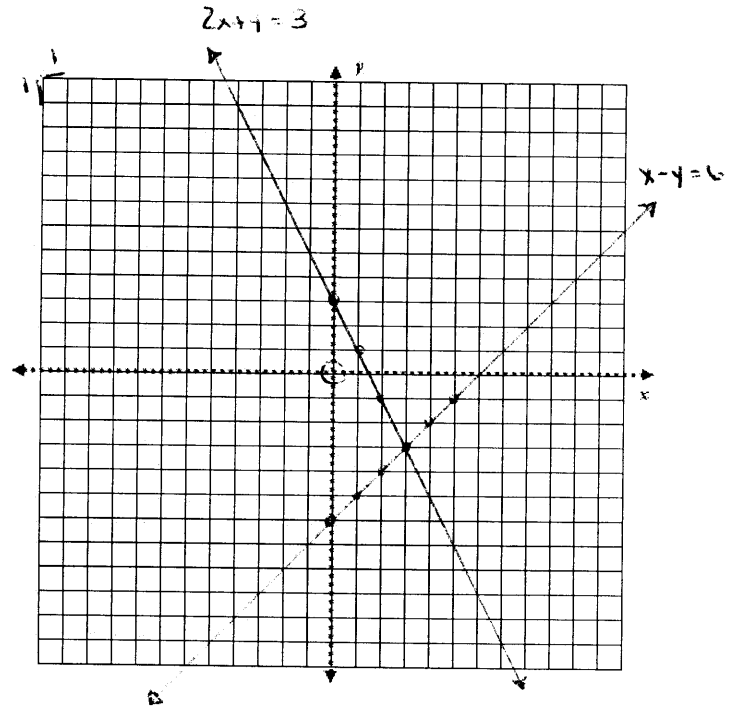
Problem 1.

Using an "acceptable" graphing technique, graph and label the following system of simultaneous linear equations on the graph provided. Provide an appropriate check.

$$\begin{array}{l}
 x - y = 6 \\
 2x + y = 3
 \end{array}
 \quad
 \begin{array}{l}
 \xrightarrow{+} \\
 x - y = 6 \\
 -y = -x + 6 \\
 y = +x - 6 \\
 m = \frac{1}{1} = \frac{\Delta y}{\Delta x} \\
 b = -6
 \end{array}
 \quad
 \begin{array}{l}
 \xrightarrow{+} \\
 2x + y = 3 \\
 y = -2x + 3 \\
 m = -\frac{2}{1} = \frac{\Delta y}{\Delta x} \\
 b = +3
 \end{array}$$

At (3, -3)

$$\begin{array}{l}
 3 - (-3) = 6 \\
 3 + 3 = 6 \\
 6 = 6 \checkmark
 \end{array}
 \quad
 \begin{array}{l}
 2(3) + (-3) = 3 \\
 6 - 3 = 3 \\
 3 = 3 \checkmark
 \end{array}$$



Problem 2.

Solve the following system of simultaneous linear equations using substitution.

$$\begin{array}{l}
 y + x = 1 \\
 2y - 8x = 1
 \end{array}
 \quad
 \begin{array}{l}
 y = (1 - x) \\
 y + .1 = 1 \\
 -.1 = .1 \\
 y = .9
 \end{array}$$

$$\begin{array}{l}
 2(1 - x) - 8x = 1 \\
 2 - 2x - 8x = 1 \\
 2 - 10x = 1 \\
 -2 \quad -2 \\
 -10x = -1 \\
 x = +.1
 \end{array}
 \quad
 \begin{array}{l}
 2(.9) - 8(.1) = 1 \\
 1.8 - .8 = 1 \\
 1 = 1 \checkmark
 \end{array}$$

Problem 3.

Solve the following system of simultaneous linear equations by elimination.

$$5 \begin{cases} x + 2y = 11 \\ 3x - 5y = -22 \end{cases}$$

$$2 \begin{cases} x + 2y = 11 \\ 3x - 5y = -22 \end{cases}$$

$$5x + 10y = 55$$

$$6x - 10y = -44$$

$$11x = 11$$

$$\boxed{x = 1}$$

$$x + 2y = 11$$

$$-1 \quad -1$$

$$2y = 10$$

$$\boxed{y = 5}$$

$$3(1) - 5(5) = -22$$

$$3 - 25 = -22$$

$$-22 = -22 \checkmark$$

Problem 4.

The sum of two voltages is 100V. If the higher voltage is doubled, and the lower voltage is halved, The sum becomes 155 V. Using two variables, find the voltages.

Let x = higher Voltage y = lower Voltage

$$x + y = 100$$

$$-2 \begin{bmatrix} 2x + .5y = 155 \end{bmatrix}$$

$$x + y = 100$$

$$-4x - y = -310$$

$$-3x = -210$$

$$x = +70$$

$$70 + y = 100$$

$$-70 \quad -70$$

$$y = 30$$

$$2(70) + .5(30) = 155$$

$$140 + 15 = 155$$

$$155 = 155 \checkmark$$

Problem 5.

5. _____

Factor: $3r - 3x + 3t^2$

$$3(r - x + t^2)$$

Problem 6.

6. _____

Factor: $6x - 18xy$

$$6x(1 - 3y)$$

Problem 7.

7. _____

Factor: $x^2 - 3x - 40$

$$(x + 5)(x - 8)$$

Problem 8.

8. _____

Factor: $x^2 - 8x + 15$

$$(x - 5)(x - 3)$$

Problem 9.

9. _____

Factor: $x^2 + 11x + 10$

$$(x + 10)(x + 1)$$

Problem 10.

10. _____

Factor: $x^2 + 7x - 30$

$$(x + 10)(x - 3)$$

Problem 11.

11. _____

Factor: $4x^2 - 25$

$$= (2x + 5)(2x - 5)$$

Problem 12.

12. _____

Factor: $25x^6 - 64t^8$

$$(5x^3 - 8t^4)(5x^3 + 8t^4)$$

Problem 13.

13. _____

Factor: $3x^2 - 17x - 6$

$$(3x^2 + 18x) - 1x - 6$$

$$3x(x+6) - 1(x+6)$$

$$(x+6)(3x-1)$$

Problem 14.

14. _____

Factor: $4x^2 + 33xy + 8y^2$ In One Variable: $4x^2 + 33x + 8$

$$(4x^2 + 32x) + 1x + 8$$

$$4x(x+8) + 1(x+8)$$

$$(x+8)(4x+1)$$

Problem 15.

15. _____

Factor Completely: $5x^4 - 80$

$$5(x^4 - 16)$$

$$5(x^2 + 4)(x^2 - 4)$$

$$5(x^2 + 4)(x+2)(x-2)$$

Section 2. Questions from Previous Exams

Problem 16.

Evaluate: $(x+4)(x-3)(x-2)$

Foil PATH

$$\begin{aligned} & x^2 - 3x + 4x - 12 \\ & x^2 + x - 12 \end{aligned}$$

$$\begin{array}{r} x^2 + x - 12 \\ x - 2 \\ \hline x^3 + x^2 - 12x \\ - 2x^2 - 2x + 24 \\ \hline x^3 - x^2 - 14x + 24 \end{array}$$

16. $x^3 - x^2 - 14x + 24$

Problem 17.

Solve for x: $15 - \frac{x}{4} = 12$

$$\begin{aligned} 60 - x &= 48 \\ -60 & \quad -60 \\ -x &= -12 \\ \underline{x} &= \underline{12} \end{aligned}$$

$$\begin{aligned} 15 - \frac{12}{4} &= 12 \\ 15 - 3 &= 12 \\ 12 &= 12 \checkmark \end{aligned}$$

17. $x = 12$

Problem 18. Simplify. Write the answer in scientific notation:

Simplify: $\frac{5.23 \times 10^5}{11.84 \times 10^{-2}}$ * 3 Significant Digits

$$\begin{aligned} & \approx 441722973 \times 10^7 \\ & = 4.42 \times 10^6 \end{aligned}$$

18. 4.42×10^6

Problem 19.

Evaluate: $(-5x^2y^3)(-6xy^2)$

$$+ 30x^3y^5$$

19. $+ 30x^3y^5$

Problem 20.

Evaluate: $(2 - 5x) - (4 - (3x + 2))$

$$\begin{aligned} &= 2 - 5x - (4 - 3x - 2) \\ &= 2 - 5x - (2 - 3x) \\ &= \cancel{2} - 5x - \cancel{2} + 3x \\ &= -2x \end{aligned}$$

20. $-2x$