Practice 3.2

Tell whether each equation has one solution, no solution, or an infinite number of solutions. Justify your answer.

1. $2x - 3 = -2\left(\frac{3}{2} - x\right)$

2. $2x + 5 = -4\left(\frac{3}{2} - x\right)$

3. $3x + 5 = 2x - 7$

4. $5y + (86 - y) = 86 + 4y$

5. $0.5(6x - 3) = 3(1 + x)$

6. $4(18a - 7) + 40 = 3(4 + 24a)$

7. $\frac{1}{7}(7x - 21) = 8x + 7x - 24$

8. $\frac{1}{6}(12x - 18) = 2\left(x - \frac{3}{2}\right)$

9. $7 - 0.75x = -7\left(\frac{3}{28}x + 1\right)$

10. $6 + 0.5y = -2\left(3 - \frac{1}{4}y\right)$

11. $\frac{x - 3}{4} = 0.25x - 0.75$

12. $\frac{1}{3}x + 5 = \frac{1}{6}\left(2x - 5\right)$

Challenge

16. *Math Journal* Look at this "proof" that $2 = 0$.

When $a = 1$ and $b = 1$, then

$(a - b)(a + b) = 0$

$a + b = 0$ Divide both sides by $a - b$.

$1 + 1 = 0$ Substitute for a and b.

$2 = 0$ Simplify.

What is wrong with this proof? How can a true statement lead to an inconsistent equation?

Practice 3.2

Tell whether each equation has one solution, no solution, or an infinite number of solutions. Justify your answer. 1 – 12 See margin for reasonings.

1. $2x - 3 = -2\left(\frac{3}{2} - x\right)$ Infinite solutions

2. $2x + 5 = -4\left(\frac{3}{2} - x\right)$ One solution, $x = 5.5$

3. $3x + 5 = 2x - 7$ One solution, $x = -12$

4. $5y + (86 - y) = 86 + 4y$ Infinite solutions

5. $0.5(6x - 3) = 3(1 + x)$ No solution

6. $4(18a - 7) + 40 = 3(4 + 24a)$ Infinite solutions

7. $\frac{1}{7}(7x - 21) = 8x + 7x - 24$ One solution, $x = 1.5$

8. $\frac{1}{6}(12x - 18) = 2\left(x - \frac{3}{2}\right)$ Infinite solutions

9. $7 - 0.75x = -7\left(\frac{3}{28}x + 1\right)$ No solution

10. $6 + 0.5y = -2\left(3 - \frac{1}{4}y\right)$ No solution

11. $\frac{x - 3}{4} = 0.25x - 0.75$ Infinite solutions

12. $\frac{1}{3}x + 5 = \frac{1}{6}\left(2x - 5\right)$ No solution

16. *Math Journal* Look at this "proof" that $2 = 0$.

When $a = 1$ and $b = 1$, then

$(a - b)(a + b) = 0$

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