

5-5a Classifying Systems of Equations

SYSTEMS OF EQUATIONS

consistent

inconsistent

AND

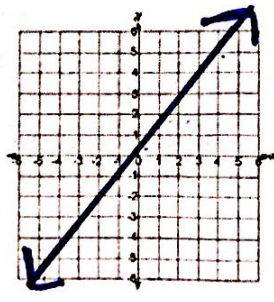
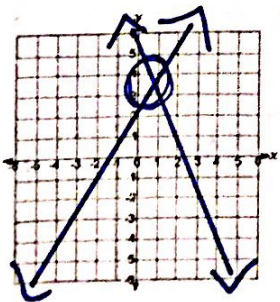
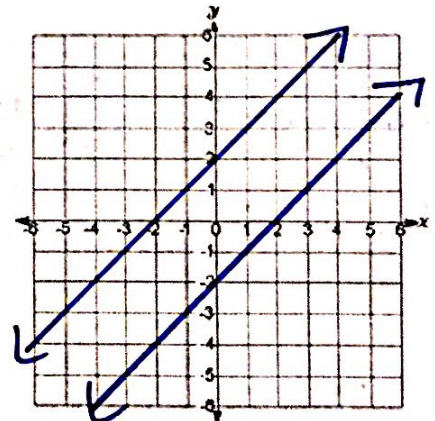
independent

dependent

no solutions
(same slope, diff y-int
parallel lines)

one solution
(intersecting
lines)

infinitely
many solutions
(same line)



5-5b Solving Special Systems

Solve and classify the system $\begin{cases} y = 2x - 4 \\ -2x + y = 3 \end{cases}$

□ Method 1: Compare slopes and y-intercepts.

* convert to $y = mx + b$

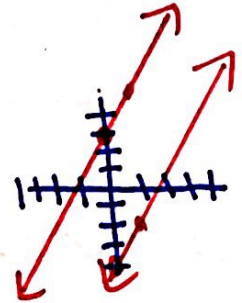
$$\begin{array}{r} -2x + y = 3 \\ +2x \quad +2x \end{array}$$

$$y = 2x + 3$$

$$y = 2x - 4$$

$$y = 2x + 3$$

same diff



□ Method 2: Solve the system algebraically.

$$y = 2x - 4$$

$$-2x + y = 3$$

$$-2x + 2x - 4 = 3$$

$$-4 = 3$$

FALSE

no solution
inconsistent system

Solve and classify the system $\begin{cases} y = 3x + 2 \\ 3x - y + 2 = 0 \end{cases}$

□ Method 1: Compare slopes and y-intercepts.

$$\begin{array}{r} 3x - y + 2 = 0 \\ +y \quad +y \end{array}$$

$$3x + 2 = y$$

$$y = 3x + 2$$

$$y = 3x + 2$$

same line

□ Method 2: Solve the system algebraically.

$$y = 3x + 2$$

$$3x - y + 2 = 0$$

$$3x - (3x + 2) + 2 = 0$$

$$3x - 3x - 2 + 2 = 0$$

$$0 = 0$$

TRUE

infinitely many solutions
consistent and dependent