

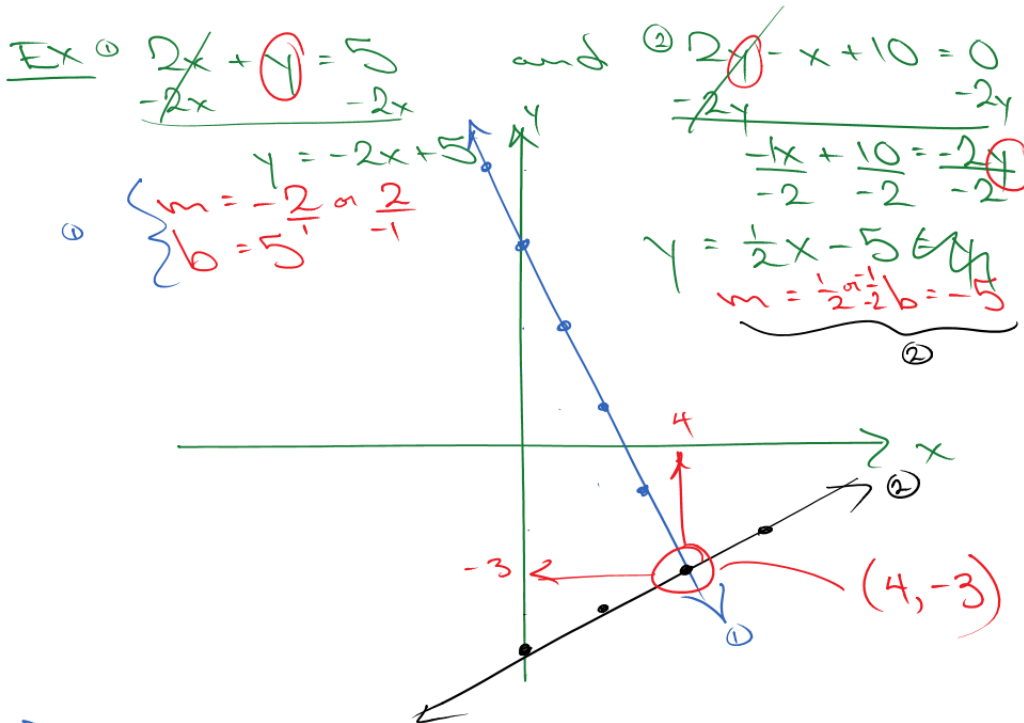
Ch 7 Review:

Systems of equations: 2 or more linear equations

Solution: an x & y value that satisfy both equations; graphically = the intersection point

A) Solving by Graphing:

- 1) convert each equation into $y = mx + b$
- 2) graph lines:
 - i) plot b (y -intercept)
 - ii) from there, follow rise/run pattern of m (slope)
- 3) where lines intersect is the solution



B) Solving by Substitution:

- 1) solve for one variable in either equation
- 2) sub this result into the OTHER equation
- 3) solve for remaining variable:
 - i) get rid of brackets (feeding chickens/multiply)
 - ii) collect like terms (CLT)
 - iii) solve using algebra
- 4) solve for other variable by sub'ing into

5) either original equation ✓
 check: sub x & y values into both
 original equations and ensure $LS=RS$.

Ex ① $3(x) - y - 2 = 0$ and ② $-2y = -6$

$3(2y-6) - y - 2 = 0$

$6y - 18 - y - 2 = 0$

$5y - 20 = 0$

$\frac{5y}{5} = \frac{20}{5}$

$y = 4$ sub into ②

$-2y = -6$
 $+2y \quad +2y$
 $x = 2y - 6$
 sub into ①

$x - 2(4) = -6$

$x - 8 = -6$

$x = 2$

Check: (2, 4)
 ① $3(2) - (4) - 2 = 0$
 $6 - 4 - 2 = 0$
 $0 = 0$ ✓

② $(2) - 2(4) = -6$
 $2 - 8 = -6$
 $-6 = -6$ ✓

C) Solving by Elimination:
 1) create equal but opposite signed coefficients
 in front of either x or y 's. by multiplying
 entire equation(s)
 2) add equations → eliminating one of variables
 3-5) same as substitution.

Ex ① $4(3x + y = 5)$ and ② $5x - 4y = -3$
 $+12x + 4y = 20$
 $+12x + 4y = 20$
 $+5x - 4y = -3$
 $17x = 17$
 $\frac{17x}{17} = \frac{17}{17}$
 $x = 1$
 sub into ①
 $3(1) + y = 5$
 $3 + y = 5$
 $-3 \quad -3$
 $y = 2$

D) Number of check Solutions:
 → to determine the # of solutions a
 system has:
 i) convert each equation into $y = mx + b$
 ii) analyze slopes & y -intercepts.

① $m_1 \neq m_2$
 → one solution

② $m_1 = m_2$
 $b_1 = b_2$
 → same line
 → infinitely
 many solutions

③ $m_1 = m_2$
 $b_1 \neq b_2$
 → no solution
 → parallel lines



E) Word problem:

- 1) Define variables as what you are trying to find (last sentence) / 2 marks
- 2) create system: write 2 equations in terms of these variables / 2 marks
- 3) solve system (substitution / elimination)
- 4) answer question / 1 mark. / 2 marks