KEY

Algebra S2- Semester 1 Final Review

Graphing:

Finding a point & slope from standard form:

Notes:

$4x + 2y = 12$
$-4x \qquad -4x$

$\frac{2y}{2} = \frac{-4x}{2} + \frac{12}{2}$ $\quad m = -2$

$y = -2x + 6 \rightarrow$ point: $(0, 6)$

Finding a point & slope from slope-intercept form:

Notes:

$y = -\frac{1}{2}x + 5$

$m = -\frac{1}{2}$

point: $(0, 5)$

Finding a point and slope from point-slope form:

Notes:

$y + 5 = \frac{1}{3}(x + 2)$

$m = \frac{1}{3}$

point: $(-2, -5)$

Finding a point and slope from perpendicular/parallel lines:

Notes:

Perpendicular to: $y = \frac{2}{3}x - 5$

perpendicular slope: $-\frac{3}{2}$

Parallel to: $y = \frac{1}{4}x + 3$

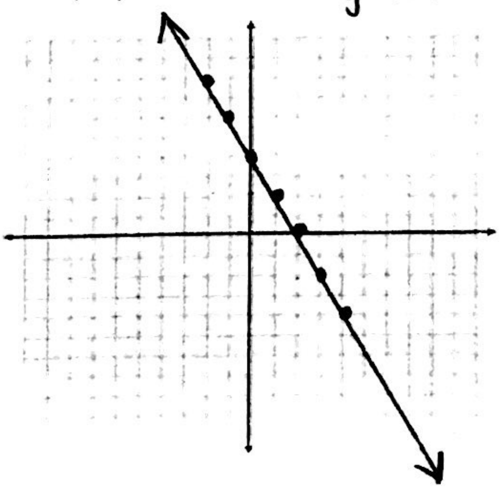
parallel slope: $\frac{1}{4}$

Example:

Graph: $y = -2x + 4$

$m = -2$

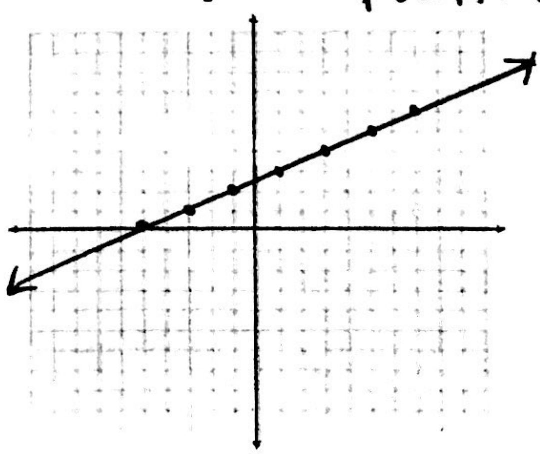
y-int: 4



Graph: $y - 3 = \frac{1}{2}(x - 1)$

$m = \frac{1}{2}$

point: $(1, 3)$



Algebra S2- Semester 1 Final Review

Forms of Linear Equations:

Slope-Intercept form:

Notes:

$y = mx + b$

slope ↲ ↳ y-intercept

$y = -2x + 4$

$m = -2$

y-int: 4

Slope

$m = \frac{y_2 - y_1}{x_2 - x_1}$

Point- Slope Form:

Notes

$y - y_1 = m(x - x_1)$

↳ slope

↳ point

$y - 4 = \frac{1}{2}(x + 2)$

$m = \frac{1}{2}$

point: $(-2, 4)$

Standard Form:

Notes:

$Ax + By = C$

constants

$3x + 5y = 2$

Examples:

Convert to slope- intercept form: $y = mx + b$

(1) $3x - 2y = 8$

$-3x \quad -3x$

$\frac{-2y}{-2} = \frac{-3x}{-2} + \frac{8}{-2}$

$\boxed{y = \frac{3}{2}x - 4}$

(2) $4x + 5y = -8$

$-4x \quad -4x$

$\frac{5y}{5} = \frac{-4x}{5} - \frac{8}{5}$

$y = -\frac{4}{5}x - \frac{8}{5}$

$\boxed{y = -\frac{4}{5}x - 1.6}$

Convert to standard form: $Ax + By = C$

(3) $y + 4 = -3(x + 1)$

$y + 4 = -3x - 3$

$+3x \quad +3x$

$3x + y + 4 = -3$

$-4 \quad -4$

$\boxed{3x + y = -7}$

(4) $y - 4 = -\frac{1}{3}(x + 6)$

$y - 4 = -\frac{1}{3}x - 2$

$+\frac{1}{3}x \quad +\frac{1}{3}x$

$\frac{1}{3}x + y - 4 = -2$

$+4 \quad +4$

$\boxed{\frac{1}{3}x + y = 2}$

Algebra S2- Semester 1 Final Review

Practice:

Convert to slope-intercept form: $y = mx + b$

(1) $x - y = -3$

$-x \qquad -x$

$\frac{-y}{-1} = \frac{-x}{-1} \frac{-3}{-1}$

$\boxed{y = x + 3}$

(2) $2x - 3y = 12$

$-2x \qquad -2x$

$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{12}{-3}$

$\boxed{y = \frac{2}{3}x - 4}$

Convert to standard form: $Ax + By = C$

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

$y - 3 = 2x - 12$

$-2x \qquad -2x$

$-2x + y - 3 = -12$

$+3 \qquad +3$

$\boxed{-2x + y = -9}$

(4) $y - 1 = \frac{2}{3}(x + 3)$

$y - 1 = \frac{2}{3}x + 2$

$-\frac{2}{3}x \quad -\frac{2}{3}x$

$-\frac{2}{3}x + y - 1 = 2$

$+1 \quad +1$

$\boxed{-\frac{2}{3}x + y = 3}$

(5) Find the slope of the line through (5,9) and (-6,-4).

$m = \frac{9-(-4)}{5-(-6)} = \boxed{\frac{13}{11}}$

(6) Write a linear equation in slope-intercept form: a slope of -2 and a y-intercept of 7.

$y = mx + b$

$\boxed{y = -2x + 7}$

(7) Write a linear equation in standard form: $Ax + By = C$ line passing through the points (-5,4) and (-1, -6).

$m = \frac{4-(-6)}{-5-(-1)} = \frac{10}{-4} = -\frac{5}{2}$

$y - 4 = -\frac{5}{2}(x-(-5))$

$y - 4 = -\frac{5}{2}(x+5)$

$y - 4 = -\frac{5}{2}x - \frac{25}{2}$

$+\frac{5}{2}x \quad +4 \quad +\frac{5}{2}x \quad +4 \rightarrow \frac{8}{2}$

$\boxed{\frac{5}{2}x + y = -\frac{17}{2}}$

(8) Write a linear equation in **both** forms: $y = mx + b$ $\quad y - y_1 = m(x - x_1)$

slope of $\frac{3}{5}$ and a y-intercept of 4. $\rightarrow (0,4)$

$\boxed{y = \frac{3}{5}x + 4}$

$\boxed{y - 4 = \frac{3}{5}(x - 0)}$

(9) Write an equation of a line in slope-intercept form that is perpendicular to $y = 3x - 7$ and passes through the point (0,-5).

y-int

$y = mx + b$

$m = -\frac{1}{3}$

$\boxed{y = -\frac{1}{3}x - 5}$

☆ (10) Write an equation of a line in slope-intercept form that is parallel to $y = \frac{2}{5}x + 9$ and passes through the point (0,2).

y-int

$y = mx + b$

$m = \frac{2}{5}$

$\boxed{y = \frac{2}{5}x + 2}$

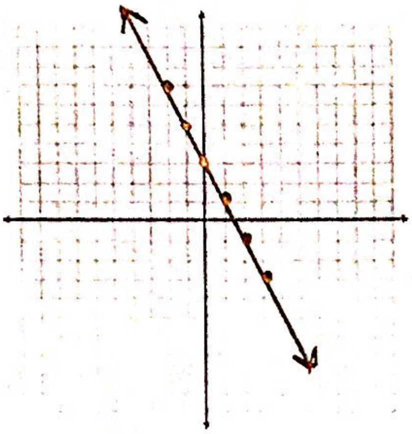
Algebra S2- Semester 1 Final Review

Practice:

Graph the following lines using the information:

(1) $y = -2x + 3$

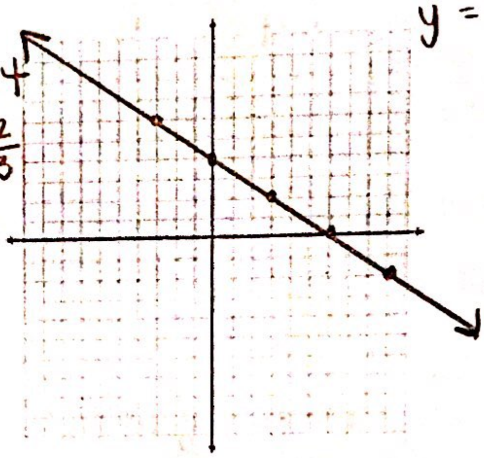
y-int: 3
slope: $-\frac{2}{1}$



(2) $2x + 3y = 12$

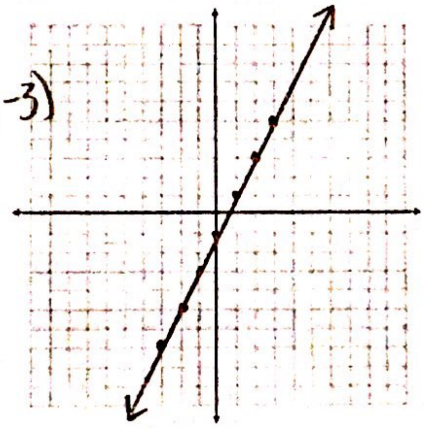
$2x + 3y = 12$
$-2x \qquad -2x$
$\frac{3y}{3} = \frac{-2x}{3} + \frac{12}{3}$
$y = -\frac{2}{3}x + 4$

y-int: 4
slope: $-\frac{2}{3}$



(3) $y + 3 = 2(x + 1)$

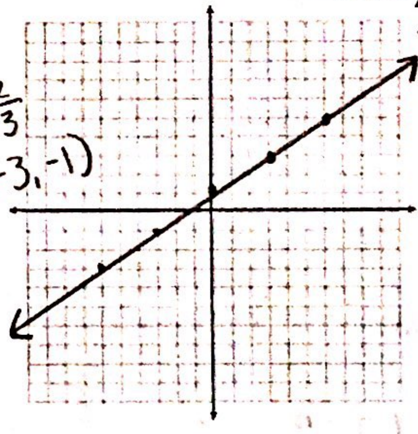
slope: 2
point: (-1,-3)



(4) Parallel to $2x - 3y = 9$, passing through (-3,-1)

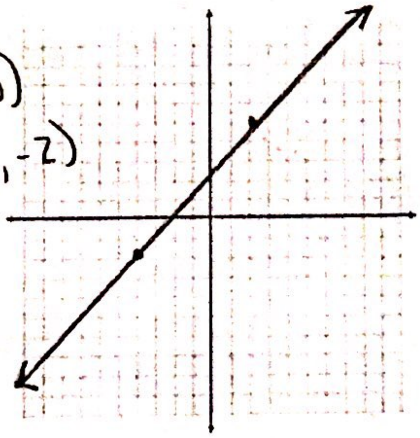
$2x - 3y = 9$
$-2x \qquad -2x$
$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{9}{-3}$
$y = \frac{2}{3}x - 3$

slope: $\frac{2}{3}$
point: (-3,-1)



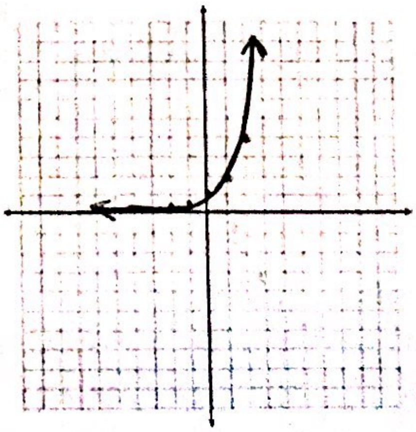
(5) Through points (2 , 5) and (-4 , -2).

point: (2, 5)
point: (-4, -2)



(6) $y = (2)^x$

x	y
-2	$\frac{1}{4}$
-1	$\frac{1}{2}$
0	1
1	2
2	4



Algebra S2- Semester 1 Final Review

Simplifying Exponents:

Product of Powers Property:

Notes:

$a^m \cdot a^n = a^{m+n}$

$x^3 \cdot x^5 = x^8$

$3^2 \cdot 3^4 = 3^6$

Power of a Power Property:

Notes:

$(a^m)^n = a^{m \cdot n}$

$(x^3)^5 = x^{15}$

$(3^2)^4 = 3^8$

Quotients property:

Notes:

① $\frac{a^m}{a^n} = a^{m-n}$

$\frac{x^5}{x^3} = x^2$

$\frac{3^4}{3^2} = 3^2$

② $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$

$\left(\frac{x}{y}\right)^3 = \frac{x^3}{y^3}$

$\left(\frac{3}{4}\right)^2 = \frac{3^2}{4^2}$

Negative Exponents & Zero Exponents:

Notes:

① $a^{-n} = \frac{1}{a^n}$

$x^{-5} = \frac{1}{x^5}$

$\frac{1}{x^{-3}} = x^3$

$3^{-2} = \frac{1}{3^2}$

$\frac{1}{3^{-4}} = 3^4$

② $a^0 = 1$

$x^0 = 1$

$3^0 = 1$

Algebra S2- Semester 1 Final Review

Practice:

(1) $x^2 \cdot x^5$

x^{2+5}

$\boxed{x^7}$

(2) $2x^5 \cdot 4x^0$

$2x^5 \cdot 4 \cdot 1$

$2 \cdot 4 \cdot 1 \cdot x^5$

$\boxed{8x^5}$

(3) $2y^3 \cdot y^1 \cdot y^5$

$2y^{3+1+5}$

$\boxed{2y^9}$

(4) $3x^3 \cdot 2x^{-3}$

$3 \cdot 2 \cdot x^{3+-3}$

$6x^0$

$\boxed{6}$

(5) $(4x^0)^3$

$(4 \cdot 1)^3$

4^3

$\boxed{64}$

(6) $\frac{x^4}{x^2y^5} \cdot \frac{y^7}{x^3}$

$\frac{x^4y^7}{x^5y^5} = x^{4-5}y^{7-5} = x^{-1}y^2$

$= \boxed{\frac{y^2}{x}}$

(7) $(x^5)^3$

$x^{5 \cdot 3}$

$\boxed{x^{15}}$

(8) $\left(\frac{2}{3}\right)^3$

$\frac{2^3}{3^3}$

$\boxed{\frac{8}{27}}$

(9) $\frac{x^5}{x^2}$

x^{5-2}

$\boxed{x^3}$

(10) $\frac{x}{4x^{-4}}$

$\frac{x^{1-(-4)}}{4}$

$\boxed{\frac{x^5}{4}}$

(11) $\left(\frac{3x}{6y^3}\right)^2$

$\frac{3^2x^2}{6^2y^6}$

$\frac{9x^2}{36y^6}$

$\boxed{\frac{x^2}{4y^6}}$

(12) $\frac{4x^0y^{-2}z^3}{4xy^4}$

$\frac{\cancel{4}y^{-2-4}z^3}{\cancel{4}x}$

$\frac{y^{-6}z^3}{x}$

$\boxed{\frac{z^3}{xy^6}}$

Algebra S2- Semester 1 Final Review

Simplifying Radicals:

Simplifying Radicals using the product property (gets rid of perfect squares in the radicand):

Notes:

$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$

$\sqrt{63} = \sqrt{9} \cdot \sqrt{7}$

$= 3\sqrt{7}$

Find the biggest perfect square factor!

Simplifying Radicals using the quotient property (gets rid of fractions in the radicand):

Notes:

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

① $\sqrt{\frac{4}{9}} = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$

② $\sqrt{\frac{3}{16}} = \frac{\sqrt{3}}{\sqrt{16}} = \frac{\sqrt{3}}{4}$

Rationalizing the Denominator (gets rid of radicals in the denominator):

Notes:

① $\sqrt{\frac{1}{3}} = \frac{\sqrt{1}}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

Multiply both top & bottom by radical denominator

② $\sqrt{\frac{3}{5}} = \frac{\sqrt{3}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{15}}{5}$

Evaluating vs. Simplifying

Simplifying: simplified answer satisfies the following rules

(1) No perfect squares allowed in the radicand.
(2) No fractions allowed in the radicand.
(3) No radicals allowed in the denominator.

Evaluating: get a whole number/decimal answer

Algebra S2- Semester 1 Final Review

Practice:

In #1-10, simplify the following expressions.

(1) $-\sqrt{45}$

$-\sqrt{9}\cdot\sqrt{5}$

$\boxed{-3\sqrt{5}}$

(2) $\sqrt{300}$

$\sqrt{100}\cdot\sqrt{3}$

$\boxed{10\sqrt{3}}$

(3) $3\sqrt{98}$

$3\sqrt{49}\cdot\sqrt{2}$

$3\cdot 7\cdot\sqrt{2}$

$\boxed{21\sqrt{2}}$

(4) $\frac{1}{2}\sqrt{28}$

$\frac{1}{2}\sqrt{4}\cdot\sqrt{7}$

$\frac{1}{2}\cdot 2\cdot\sqrt{7}$

$\boxed{\sqrt{7}}$

(5) $4\sqrt{9}$

$4\cdot 3$

$\boxed{12}$

(6) $\sqrt{108}$

$\sqrt{36}\cdot\sqrt{3}$

$\boxed{6\sqrt{3}}$

(7) $\sqrt{-49}$

$\boxed{\text{undefined}}$

(8) $\sqrt{\frac{16}{3}}$

$\frac{\sqrt{16}}{\sqrt{3}} = \frac{4}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}$

$= \boxed{\frac{4\sqrt{3}}{3}}$

(9) $-2\sqrt{\frac{8}{10}}$

$-2\sqrt{\frac{4}{5}} = -2\frac{\sqrt{4}}{\sqrt{5}} = -2\frac{2}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}$

$= \boxed{\frac{-4\sqrt{5}}{5}}$

(10) $5\sqrt{\frac{27}{45}}$

$5\sqrt{\frac{9}{15}} = 5\frac{\sqrt{9}}{\sqrt{15}} = 5\frac{3}{\sqrt{15}}\cdot\frac{\sqrt{15}}{\sqrt{15}}$

$= \frac{15\sqrt{15}}{15}$

$= \boxed{\sqrt{15}}$

Evaluate the following expressions:

(11) $5 \pm 2\sqrt{3}$

5 ± 3.46

$\boxed{8.46, 1.54}$

(12) $\frac{2\pm 3\sqrt{5}}{3}$

$\frac{2 \pm 6.7}{3}$

$\boxed{2.9, -1.57}$

(13) Evaluate $\sqrt{b^2 - 4ac}$ when $a = -5, b = 6, c = 7$

$\sqrt{(6)^2 - 4(-5)(7)}$

$\sqrt{36 + 140}$

$\sqrt{176}$

$\boxed{13.26}$

Algebra S2- Semester 1 Final Review

Solving quadratics with square roots:

Notes: ① $\frac{2x^2}{2} = \frac{72}{2}$
$x^2 = 36$
$\sqrt{x^2} = \sqrt{36}$
$\boxed{x = \pm 6}$

② $x^2 = 64$
$\sqrt{x^2} = \sqrt{64}$
$\boxed{x = \pm 8}$

* Don't forget ± when √#

Solving inequalities:

Notes: ① $4x - 2 \geq 14$
$+2 \quad +2$
$\frac{4x}{4} \geq \frac{16}{4}$
$\boxed{x \geq 4}$

② $\frac{-3x}{-3} > \frac{9}{-3}$
$x < -3$

* Flip sign when multiply / divide by a negative number!

Solving equations:

Notes: ① $3x + 7 = 28$
$-7 \quad -7$
$\frac{3x}{3} = \frac{21}{3}$
$\boxed{x = 7}$

* Get variable by itself!
* Take off layers around variable.

Practice:

(1) $x^2 - 5 = -4$
$+5 \quad +5$
$x^2 = 1$
$\sqrt{x^2} = \sqrt{1}$
$\boxed{x = \pm 1}$

(2) $9x^2 + 10 = 91$
$-10 \quad -10$
$\frac{9x^2}{9} = \frac{81}{9}$
$x^2 = 9$
$\sqrt{x^2} = \sqrt{9}$
$\boxed{x = \pm 3}$

(3) $x^2 = 64$
$\sqrt{x^2} = \sqrt{64}$
$\boxed{x = \pm 8}$

(4) $3 + 4x^2 = -85$
$-3 \quad -3$
$\frac{4x^2}{4} = \frac{-88}{4}$
$x^2 = -22$
$\sqrt{x^2} = \sqrt{-22}$
$\boxed{\text{no real solution}}$

(5) $\frac{-5x^2}{-5} = \frac{-500}{-5}$
$x^2 = 100$
$\sqrt{x^2} = \sqrt{100}$
$\boxed{x = \pm 10}$

(6) $\frac{2(x-5)}{2} = \frac{10}{2}$
$x - 5 = 5$
$+5 \quad +5$
$\boxed{x = 10}$

(7) $4x - 5 - 2x = 3 + x$
$2x - 5 = 3 + x$
$-x \quad -x$
$x - 5 = 3$
$+5 \quad +5$
$\boxed{x = 8}$

(8) $5x - 10 = 5$
$+10 \quad +10$
$\frac{5x}{5} = \frac{15}{5}$
$\boxed{x = 3}$

(9) $10x + 6 \leq 26$
$-6 \quad -6$
$\frac{10x}{10} \leq \frac{20}{10}$
$\boxed{x \leq 2}$

(10) $3 - 2x < 16$
$-3 \quad -3$
$\frac{-2x}{-2} < \frac{13}{-2}$
$\boxed{x < -\frac{13}{2}}$

Algebra S2- Semester 1 Final Review

Solving a System of Linear Equations:

Solving a system by graphing:

Notes:

① $y = 4x - 5$

$m = 4$

y-int: -5

② $2x + y = 7$

$\quad -2x \qquad -2x$

$y = -2x + 7$

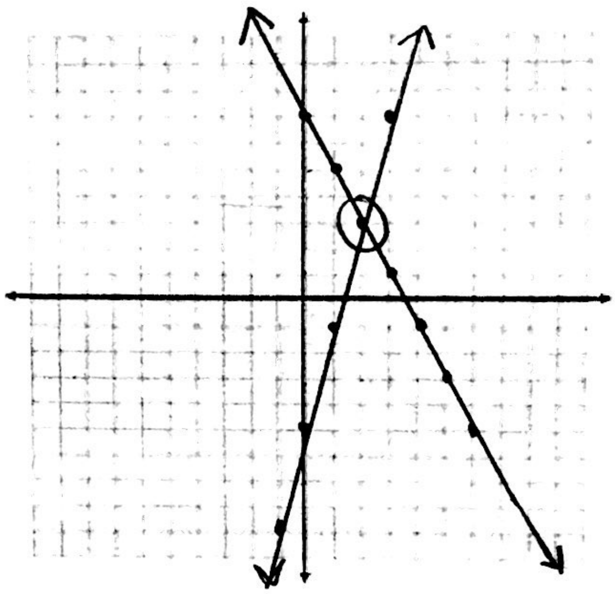
$m = -2$

y-int: 7

Solution: $\boxed{(2,3)}$

Steps:

(1) Graph both of the lines.
(2) Find the point where the lines intersect.
(3) Solution is always a coordinate point.



Solving a system by substitution:

Notes:

① $2x + 2y = 3$

② $x - 4y = -1$

$x - 4y = -1$

$\quad +4y \quad +4y$

$x = 4y - 1$ → $x = 4\left(\frac{1}{2}\right) - 1$

$2(4y - 1) + 2y = 3$

$8y - 2 + 2y = 3$

$10y - 2 = 3$

$10y = 5$

$\boxed{y = \frac{1}{2}}$

$x = 2 - 1$

$\boxed{x = 1}$

$\boxed{\left(1, \frac{1}{2}\right)}$

Steps:

(1) Isolate one variable of <u>one</u> equation (pick the easiest).
(2) Substitute the expression from step 1 into **<u>the other</u>** equation. Solve.
(3) You're half way! Substitute that solution into the original equation and solve for the remaining variable.
(4) Answer will always be a coordinate point.

Algebra S2- Semester 1 Final Review

Solving a system by elimination:

Notes:

① $5x + 2y = -4$

② $5x - 3y = -19$

$-1(5x + 2y = -4)$

$-\cancel{5x} - 2y = 4$

$+ \ \cancel{5x} - 3y = -19$

$-5y = -15$

$\boxed{y = 3}$

$5x + 2(3) = -4$

$5x + 6 = -4$

$5x = -10$

$\boxed{x = -2}$

$\boxed{(-2, 3)}$

Steps:

(1) Rearrange the equations into Standard Form (Ax + By = C)

(2) If a variable does not eliminate, multiply one or both equations to get **opposite** coefficients of the same variable.

(3) Add the columns together (one variable should eliminate). Solve for the remaining variable. Half way!

(4) Take that solution and plug it into either equation and solve for the remaining variable.

(5) Answer is always a coordinate point.

Solving a system of inequalities:

Notes:

① $y \geq -\frac{1}{2}x + 1$

solid

$m = -\frac{1}{2}$

y-int: 1

Test:

x	y	
0	0	x
0	2	✓

② $y < 5$

dashed horizontal

Test:

x	y	
0	0	✓
0	7	x

③ $x \leq 6$

solid vertical

Test:

x	y	
0	0	✓
8	0	x

Steps:

(1) Rearrange both equations into either "SIF" or "SF".

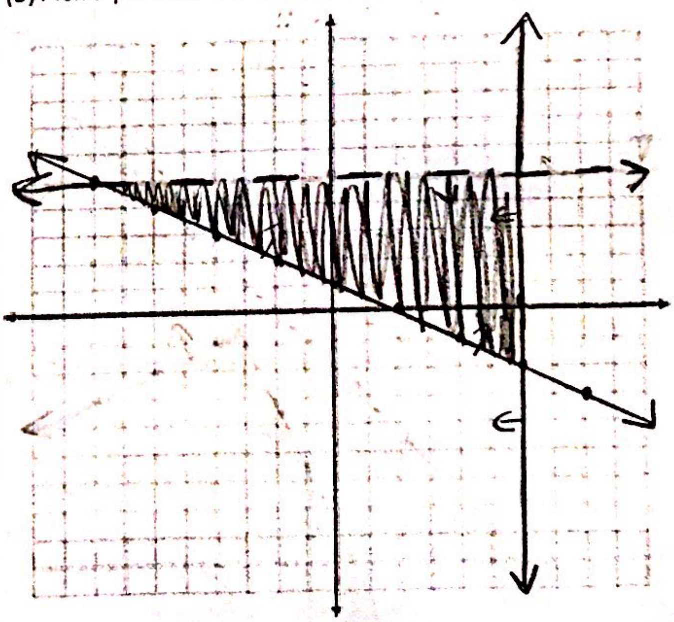
(2) Graph both of the lines.

a. Use a dashed line for >, <

b. Use a solid line for ≥, ≤

c. Shade above for ≥, >; below for ≤, < ****

(3) Pick a point in the shaded area to check your solution



Scanned by CamScanner

Algebra S2- Semester 1 Final Review

Practice:

For #1-2, use **elimination** to solve the system of equations.

(1) $-\cancel{4}x - 2y = -12$
$+\ \cancel{4}x + 8y = -24$

$6y = -36$

$\boxed{y = -6}$

$-4x - 2(-6) = -12$

$-4x + 12 = -12$

$-4x = -24$

$\boxed{x = 6}$

$\boxed{(6, -6)}$

(2) $-3\,(-3x + 7y = -16)$
$-9x + 5y = 16$

$+\ \cancel{9}x - 21y = 48$

$-16y = 64$

$\boxed{y = -4}$

$-3x + 7(-4) = -16$

$-3x - 28 = -16$

$-3x = 12$

$\boxed{x = -4}$

$\boxed{(-4, -4)}$

For #3-4, use **substitution** to solve the system of equations.

(3) $y = -8x - 16 \rightarrow y = -8(-1) - 16$
$-3x + y = -5$

$y = 8 - 16$

$\boxed{y = -8}$

$-3x + (-8x - 16) = -5$

$-3x - 8x - 16 = -5$

$-11x - 16 = -5$

$-11x = 11$

$\boxed{x = -1}$

$\boxed{(-1, -8)}$

(4) $x - y = 11$

$2x = 19 - y$

$x - y = 11$

$x = 11 + y \rightarrow x = 11 + -1$

$\boxed{x = 10}$

$2(11 + y) = 19 - y$

$22 + 2y = 19 - y$

$22 + 3y = 19$

$3y = -3$

$\boxed{y = -1}$

$\boxed{(10, -1)}$

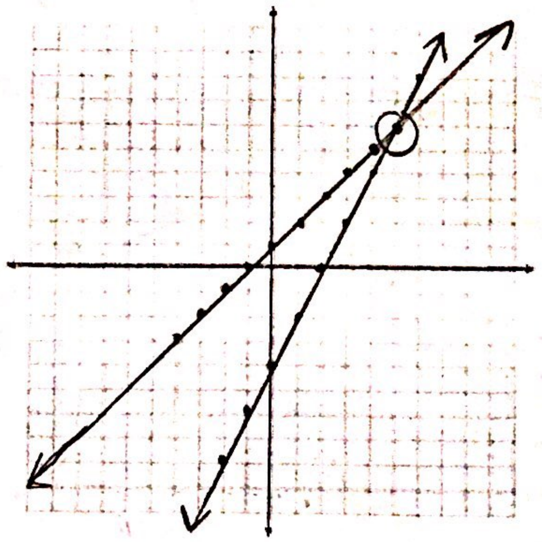
For #5-6, use **graphing** to solve the system of equations.

(5) $y = x + 1$
$y = 2x - 4$

slope: 1
y-int: 1

slope: 2
y-int: -4

$\boxed{(5, 6)}$



(6) $-2x - y = -6 \rightarrow -y = 2x - 6$
$y = -2x + 6$

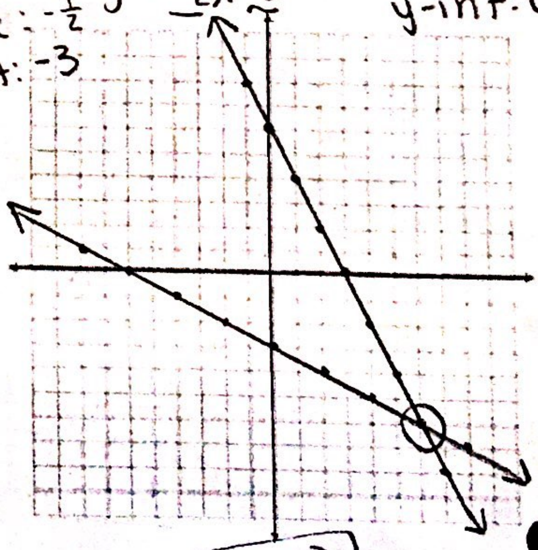
slope: -2
y-int: 6

$2y = x - 6$

$\frac{2y}{2} = \frac{-x}{2} - \frac{6}{2}$

$y = -\frac{1}{2}x - 3$

slope: $-\frac{1}{2}$
y-int: -3



$\boxed{(6, -6)}$

Algebra S2- Semester 1 Final Review

Graph the system of inequalities:

Test:

x	y	
0	0	✓
0	-6	x

(1) $y \ge \frac{1}{2}x - 4$ solid

slope: $\frac{1}{2}$

y-int: -4

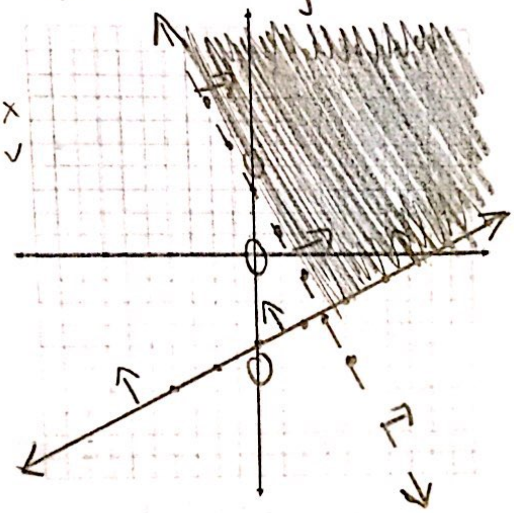
$y > -2x + 3$ dashed

slope: -2

y-int: 3

Test:

x	y	
0	0	x
0	4	✓



Test:

x	y	
0	0	✓
0	-7	x

(2) $y \ge -5$ horizontal solid

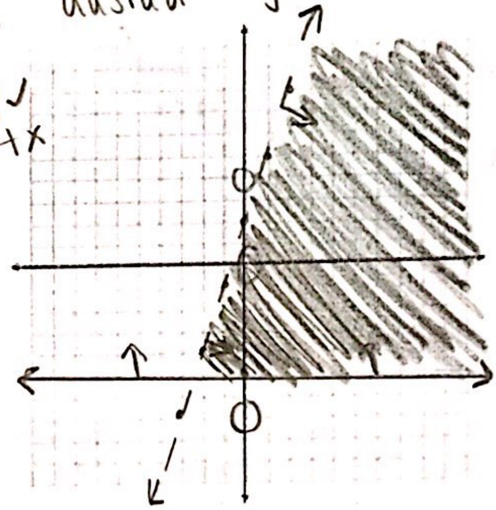
$y < 3x + 2$ dashed

slope: 3

y-int: 2

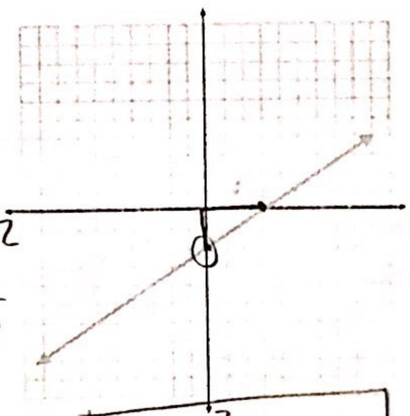
Test:

x	y	
0	0	✓
0	4	x



Write the equation of the line from the graph:

(3)

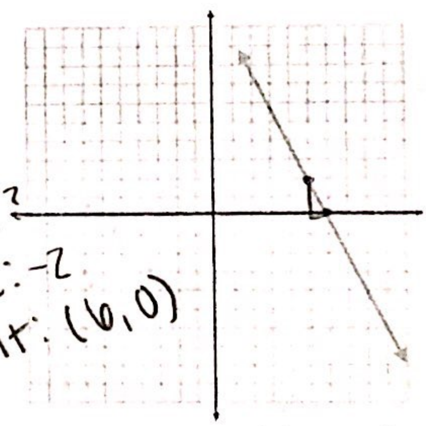


y-int: -2

slope: $\frac{2}{3}$

$\boxed{y = \frac{2}{3}x - 2}$

(4)



y-int: ?

slope: -2

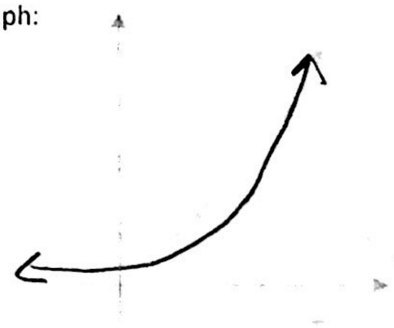
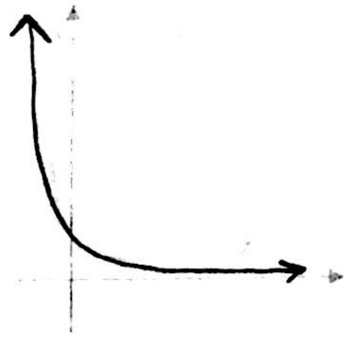
point: (6,0)

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

$\boxed{y = -2x + 12}$

Algebra S2- Semester 1 Final Review

Exponential Growth and Decay:

Growth	Decay
Formula: $y = C(1+r)^t$	Formula: $y = C(1-r)^t$
Graph: 	Graph: 

decay

Ex 1). In an experiment it has been noted that a certain drug kills the salmonella bacteria at a rate of 9% per hour. If the initial population of the bacteria was 100,000, what will it be 5 hours after taking the drug?

$y = C(1-r)^t$
$y = 100{,}000(1-0.09)^5$
$y = 100{,}000(0.91)^5$
$y \approx \boxed{62{,}403 \text{ bacteria}}$

decay

Ex 2). Today you bought a truck for \$10,000. The price of the truck depreciates at a rate of 8% per year. What would the price of the truck be after 7 years?

$y = C(1-r)^t$
$y = 10{,}000(1-0.08)^7$
$y = 10{,}000(0.92)^7$
$y \approx \boxed{\$5{,}578.47}$

Practice:

growth

(1) Find the bank account balance if the account starts with \$100, has an annual rate of 4%, and the money was left in the account for 12 years.

$y = C(1+r)^t$
$y = 100(1+0.04)^{12}$
$y = 100(1.04)^{12}$
$y \approx \boxed{\$160.10}$

decay

(2) You buy a new computer for \$2,100. The computer decreases by 50% annually. What will the price of the computer be in 3 years?

$y = C(1 \cdot r)^t$
$y = 2{,}100(1-0.5)^3$
$y = 2{,}100(0.5)^3$
$y \approx \boxed{\$262.50}$