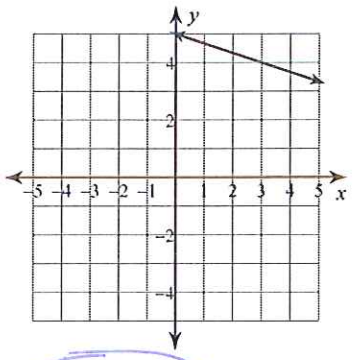
Algebra 1 Name Key ID: 1

Quarter 3 Review

Date _____ Period ____

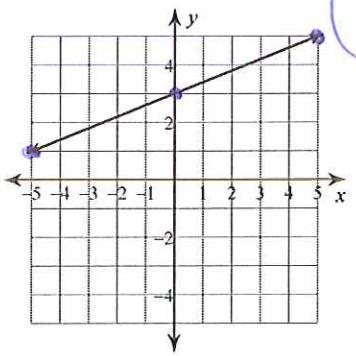
Write the SLOPE-INTERCEPT form of the equation of each line.

1)



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

2)



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

3) Slope = –10, y-intercept = 5

$y = -10x + 5$

4) Slope = –1, y-intercept = –2

$y = -x - 2$

5) $x - 8y = 16$

$-x \quad -x$

$-8y = -x + 16$

$\frac{-8y}{-8} = \frac{-x}{-8} + \frac{16}{-8}$

$y = \frac{1}{8}x - 2$

6) $3x + 4y = 16$

$-3x \quad -3x$

$4y = -3x + 16$

$\frac{4y}{4} = \frac{-3x}{4} + \frac{16}{4}$

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

7) through: (1, –4), slope = 1

$y = x - 5$

$y = 1x + b$

$-4 = 1(1) + b$

$b = -5$

8) through: (2, 4), slope = 3

$y = 3x - 2$

$y = 3x + b$

$4 = 3(2) + b$

$b = -2$

9) through: (–5, 0), slope = $\frac{3}{5}$

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

$y = \frac{3}{5}x + b$

$0 = \frac{3}{5}(-5) + b$

$b = 3$

10) through: (–3, 3), slope = $-\frac{1}{2}$

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

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

$3 = -\frac{1}{2}(-3) + b$

$3 = \frac{+3}{2} + b \quad b = 3/2$

$-3/2 \quad -3/2$

Write the POINT-SLOPE form of the equation of the line through the given point with the given slope.

11) through: (–4, –1), slope = $\frac{3}{2}$

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

12) through: (4, 3), slope = $\frac{3}{4}$

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

Write the STANDARD form of the equation of each line.

13) $y = -\frac{7}{3}x + 1$

$3(y = -\frac{7}{3}x + 1)$ → $3y = -7x + 3$, $+7x \quad +7x$

$7x + 3y = 3$

14) $y = \frac{2}{3}x + 4$

$3(y = \frac{2}{3}x + 4)$ → $3y = 2x + 12$, $-2x \quad -2x$

$2x - 3y = -12$ $\quad (-2x + 3y = 12)$

Write the SLOPE-INTERCEPT form of the equation of each line.

15) through: $(0, 0)$ and $(-2, 4)$

$y = -2x$

$y = mx + b$

$m = \frac{4-0}{-2-0}$

$m = -2$

16) through: $(-1, 5)$ and $(-1, 0)$

$x = -1$

$m = \frac{0-5}{-1+1} = \frac{-5}{0}$ = undefined

17) Write 3 equations of lines that are parallel to the line $y = \frac{2}{5}x + 3$?

~~$y = 3x + 4$~~

same slope

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

$y = 2/5x + 2$

$y = 2/5x + 4$

18) Write 3 equations of lines that are perpendicular to the line $y = -\frac{3}{7}x - 2$?

~~$y = 6x + 1$~~

→ opposite reciprocal slopes

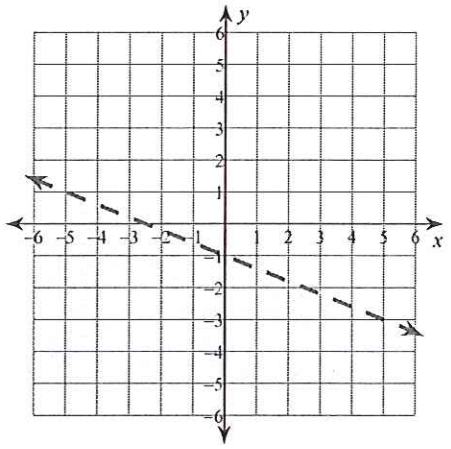
$y = \frac{7}{3}x - 2$

$y = \frac{7}{3}x - 1$

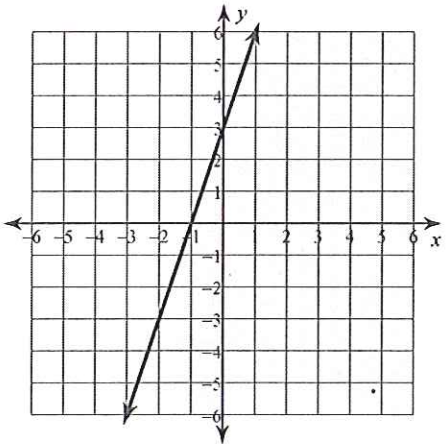
$y = 7/3x$

Sketch the graph of each linear inequality.

19) $y < -\frac{2}{5}x - 1$



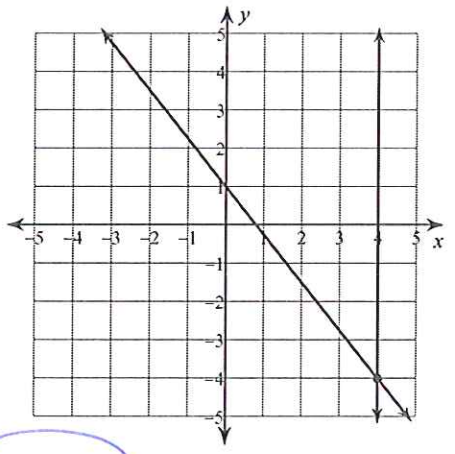
20) $y \leq 3x + 3$



Which point will solve each system?

21) $x = 4$

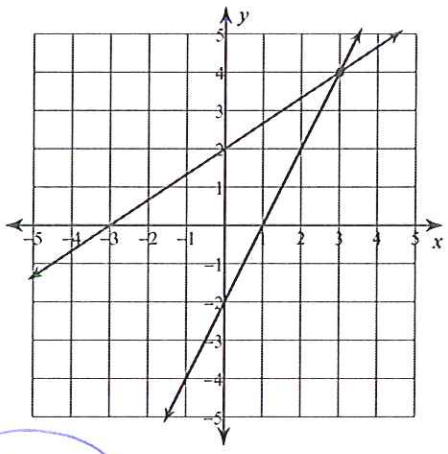
$y = -\frac{5}{4}x + 1$



(4, –4)

22) $y = \frac{2}{3}x + 2$

$y = 2x - 2$



(3, 4)

Solve each system.

23) $y = -10x - 23$

$10x + 5y = 5$

(–3, 7)

$10x + 5(-10x - 23) = 5$

$10x - 50x - 115 = 5$

$-40x = 120$

$x = -3$

$y = -10(-3) - 23$

$y = 7$

24) $-3x - 6y = 0$

$y = -9x + 17$

(2, –1)

$-3x - 6(-9x + 17) = 0$

$-3x + 54x - 102 = 0$

$51x = 102$

$x = 2$

$y = -9(2) + 17$

$y = -1$

25) $-10x - 20y = -17$

$2(5x + 10y = 5)$

No solution

$-10x - 20y = -17$

$10x + 20y = 10$

$0 + 0 = -7$

false

so $\emptyset$

26) $-x + 7y = -27$

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

(–8, –5)

$-x + 7y = -27$

$x - 2y = 2$

$5y = -25$

$y = -5$

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

$-x - 10 = -2$

$-x = 8$

$x = -8$

27) $-9x - 14y = -19$

$-10x - 7y = -4$

(–1, 2)

28) The senior classes at High School A and High School B planned separate trips to the local amusement park. The senior class at High School A rented and filled 7 vans and 1 bus with 90 students. High School B rented and filled 2 vans and 5 buses with 219 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

Van: 7, Bus: 41

x = # of students in van
y = # of students in bus

$-5(7x+1y=90)$
$2x+5y=219$

$-35x-5y=-450$
$2x+5y=219$
$-33x=-231$
$x=7$

$7(7)+y=90$
$49+y=90$
$y=41$

A van holds 7 students and a bus holds 41 students

29) Kathryn and Ndiba are selling cookie dough for a school fundraiser. Customers can buy packages of chocolate chip cookie dough and packages of oatmeal cookie dough. Kathryn sold 8 packages of chocolate chip cookie dough and 8 packages of oatmeal cookie dough for a total of \$240. Ndiba sold 5 packages of chocolate chip cookie dough and 4 packages of oatmeal cookie dough for a total of \$135. What is the cost each of one package of chocolate chip cookie dough and one package of oatmeal cookie dough?

package of chocolate chip cookie dough: \$15, package of oatmeal cookie dough: \$15

x = cost of C.C. cookies
y = cost of oatmeal cookies

$8x+8y=240$
$-2(5x+4y=135)$

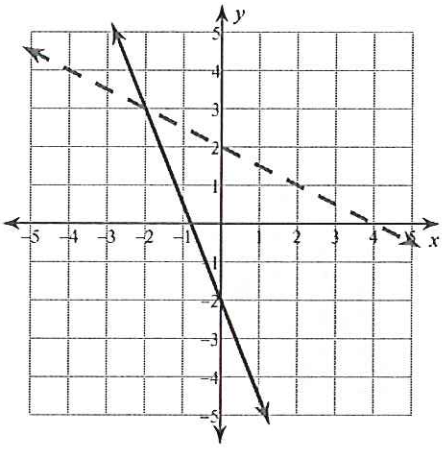
$8x+8y=240$
$-10x-8y=-270$
$-2x=-30$
$x=15$

$5(15)+4y=135$
$75+4y=135$
$4y=60$
$y=15$

Sketch the solution to each system of inequalities.

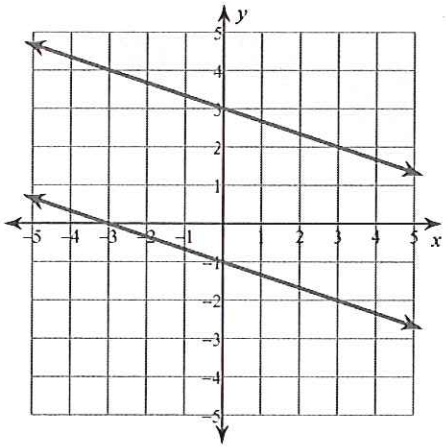
30) $y \geq -\frac{5}{2}x-2$

$y < -\frac{1}{2}x+2$



31) $y \geq -\frac{1}{3}x-1$

$y \geq -\frac{1}{3}x+3$



32) Explain what a break even point is and how to find it.

A break even point is when the income and cost of a company are the same so the company doesn't make or lose any money.

Simplify. Your answer should contain only positive exponents.

33) $x \cdot 4x^4y^3$

$4x^5y^3$

34) $(u^2v^0)^2$

u^4

35) $\dfrac{n^{-4}}{4nm^4}$

$\dfrac{1}{4n^5m^4}$

36) $(a^{-1}b^2)^3 \cdot 2a^2$

$\dfrac{2b^6}{a}$

37) $\left(\dfrac{2yx^2}{2xy^0 \cdot 2x^{-4}y^2}\right)^2$

$\dfrac{4y^2x^4}{4x^2 \cdot 4x^{-8}y^4} = \dfrac{y^2x^4x^8}{x^2 \cdot 4y^4} = \dfrac{x^{10}}{4y^2}$

$\dfrac{x^{10}}{4y^2}$

Write each number in scientific notation.

38) 190000

1.9×10^5

39) 0.0046

4.6×10^{-3}

Write each number in standard notation.

40) 3×10^{-4}

0.0003

41) 9.5×10^5

950000