Sec. 6.5 Linear Inequalities

Solution: in two variables
- ordered pair that makes the statement true

Problem 1:

Is the ordered pair a solution of $y < x + 2$?

a. $(-5, 2)$ (x, y)

not a solution

$2 < -5 + 2$ - Plug in (x, y).

$2 < -3$ F - Simplify

b. $(4, 6)$ (x, y)

not a solution

$y < x + 2$

$6 < 4 + 2$

$6 < 6$ F

c. $(0, 0)$

solution

$y < x + 2$

$0 < 0 + 2$

$0 < 2$ T

Problem 2:

What is the graph of $y < x - 1$?

SHADE:

Test a point (If (0,0) is on the line, choose different pt.)

(0, 0)

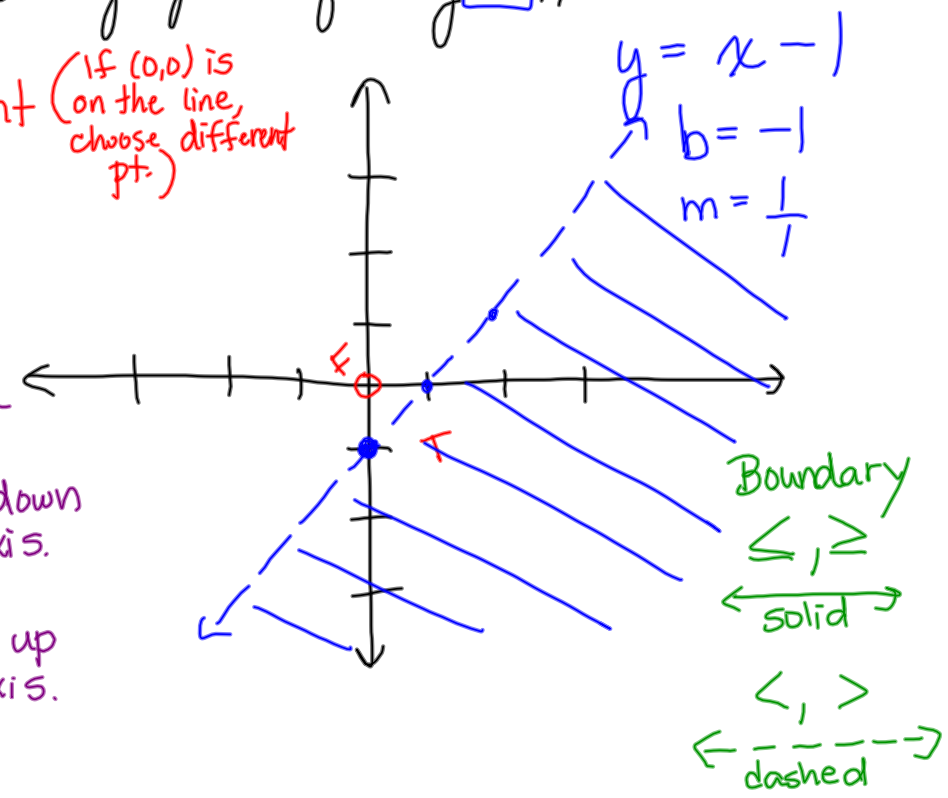
$0 < 0 - 1$

$0 < -1$ F

OR

$y <$ Shade down y-axis.

$y >$ Shade up y-axis.



Problem 3:

Graph

a. $x < 2$

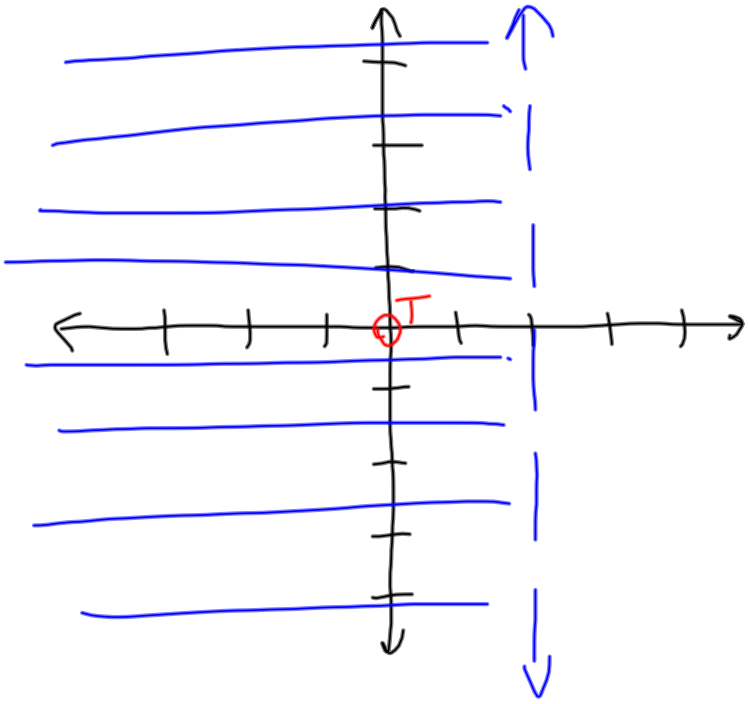
vux

② Dashed or solid

< Shade

(0,0)

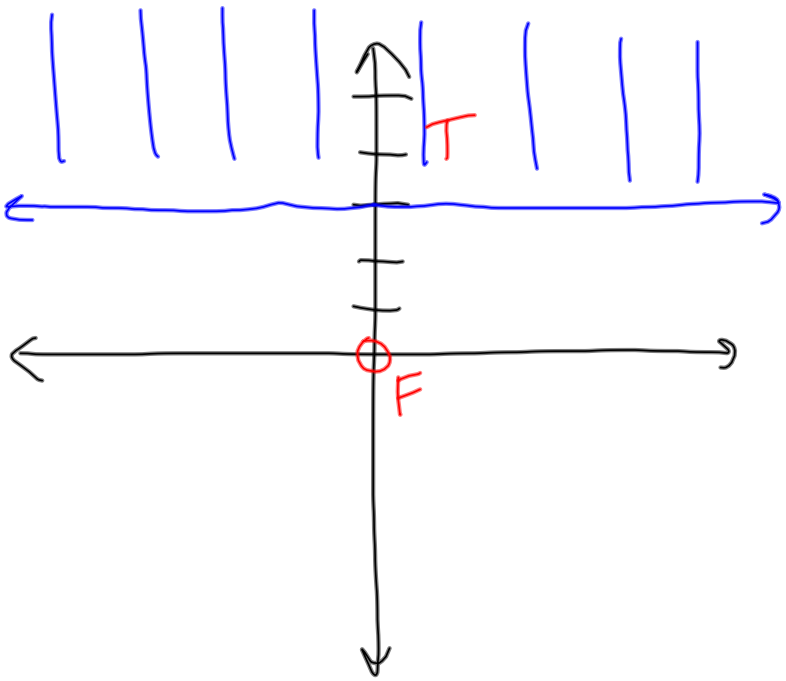
$0 < 2$



b. $y \geq 3$

(0,0)

$0 \geq 3$



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Problem 4:

You can spend no more than $20 for hot dogs and hamburgers. Hot dogs cost $5 and hamburgers cost $8 per package.

Write an inequality to describe how many hot dog and hamburger packages can be purchased.

What three possible combinations?

$5x + 8y \leq 20$

x = # of packs of hot dogs

y = # of packs of hamburgers

X (2, 2) → $5 \cdot 2 + 8 \cdot 2 \leq 20$

$10 + 16 \leq 20$ F

$26 \leq 20$

(2, 1) → $5 \cdot 2 + 8 \cdot 1 \leq 20$

$10 + 8 \leq 20$

$18 \leq 20$ T

(1, 1) → $5 \cdot 1 + 8 \cdot 1 \leq 20$

$5 + 8 \leq 20$

$13 \leq 20$ T

(0, 0) → $5 \cdot 0 + 8 \cdot 0 \leq 20$

$0 \leq 20$ T

(0, 2) → $5 \cdot 0 + 8 \cdot 2 \leq 20$

$16 \leq 20$ T

(4, 0) → $5 \cdot 4 + 8 \cdot 0 \leq 20$

$20 \leq 20$ T

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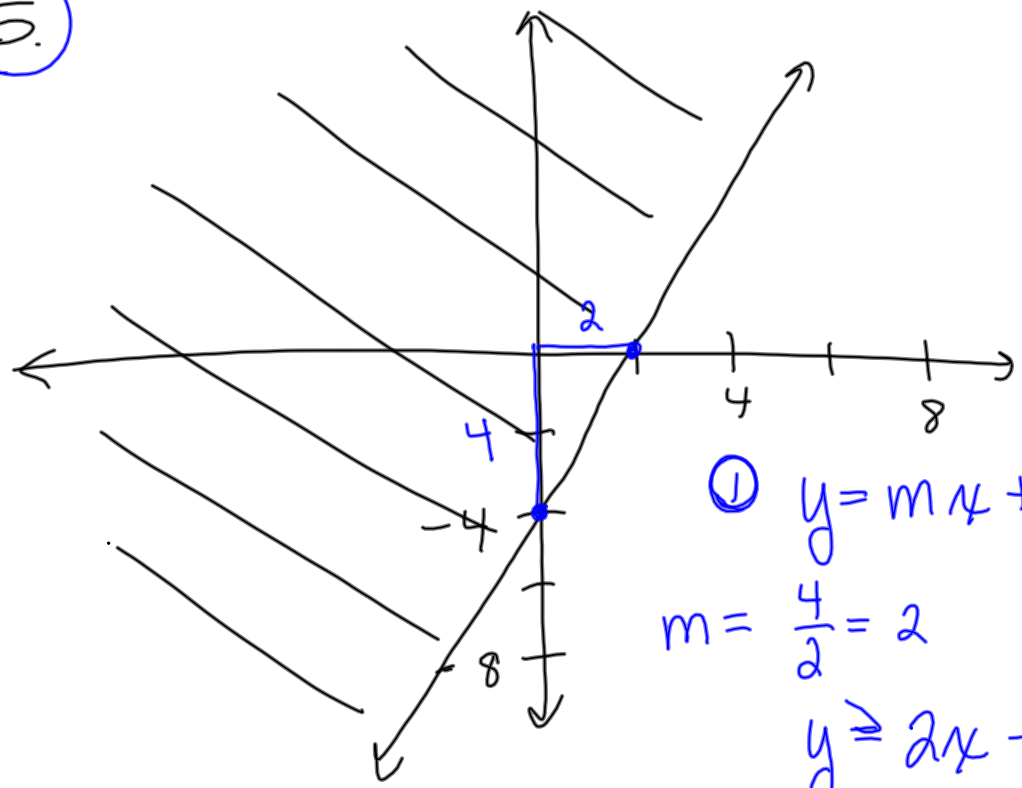
5.



① $y = mx + b$

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

$y \geq 2x - 4$

② ←——→ ←- - -→

$\leq$, $\geq$ $<$, $>$

↓ ↑ ↓ ↑

③ down up down up

y-axis

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