

$$\textcircled{1} 3(x-5) \geq 2x - 4(5-2x)$$

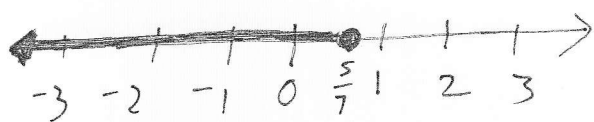
$$3x - 15 \geq 2x - 20 + 8x$$

$$3x - 15 \geq 10x - 20$$

$$5 \geq 7x$$

$$\frac{5}{7} \geq x$$

$$(-\infty, \frac{5}{7}]$$



$$\textcircled{4} 2|x-5| - 3 \geq 5$$

$$2|x-5| \geq 8$$

$$|x-5| \geq 4$$

$$x-5 \geq 4 \quad \text{OR} \quad x-5 \leq -4$$

$$x \geq 9 \quad \text{OR} \quad x \leq 1$$

In order

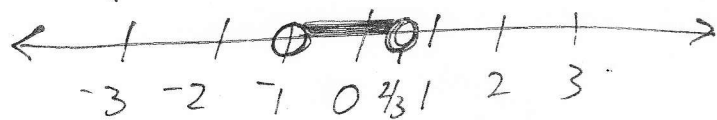
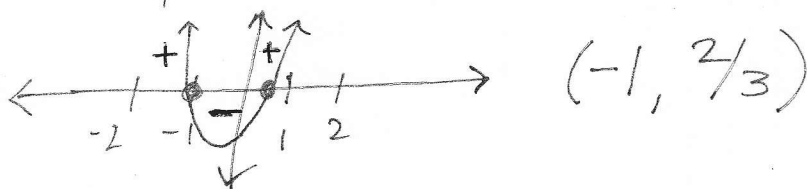
$$[9, \infty) \quad \text{OR} \quad (-\infty, 1]$$

$$(-\infty, 1] \cup [9, \infty)$$



$$\textcircled{5} (3x-2)(x+1) < 0$$

Graph: Roots  $x = \frac{2}{3}, -1$



$$\textcircled{2} |2x-3| \leq 7$$

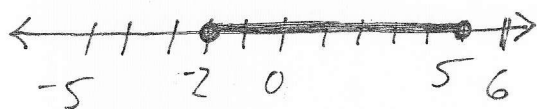
AND

$$-7 \leq 2x-3 \leq 7$$

$$-4 \leq 2x \leq 10$$

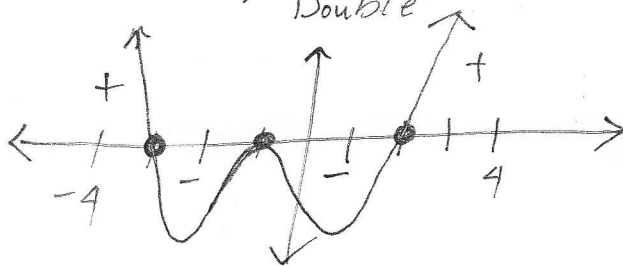
$$-2 \leq x \leq 5$$

$$[-2, 5]$$

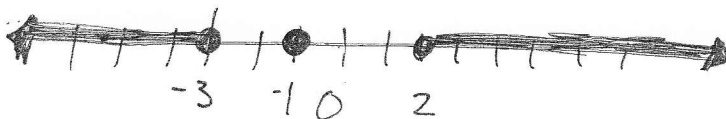
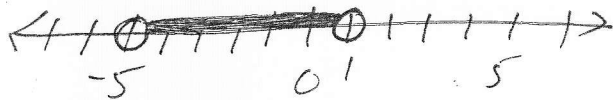


$$\textcircled{6} (x-2)(x+1)^2(x+3) \geq 0$$

Roots  $x=2, x=-1$  (Double),  $x=-3$  include zeros above x-axis

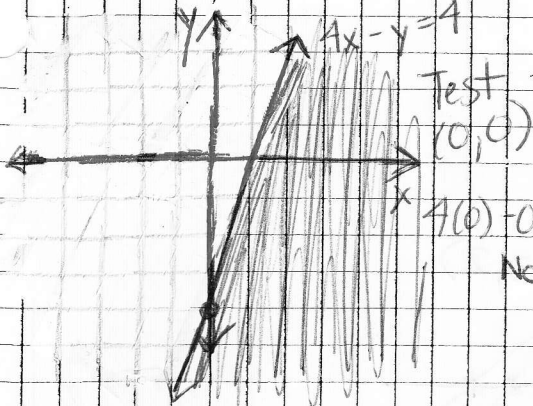


$$(-\infty, -3] \cup [-1, 2] \cup [2, \infty)$$



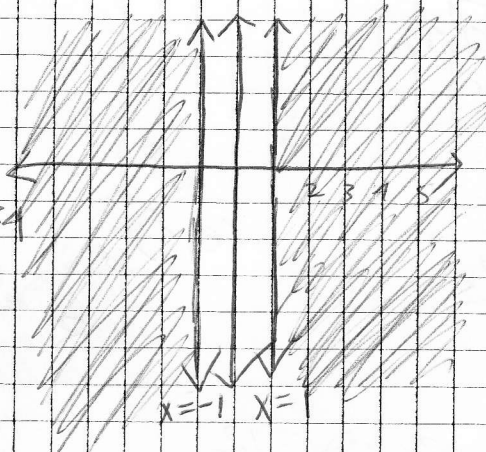
⑦  $4x - y \geq 4$

$x$ -int  $x=1$   $y$ -int  $y=-4$

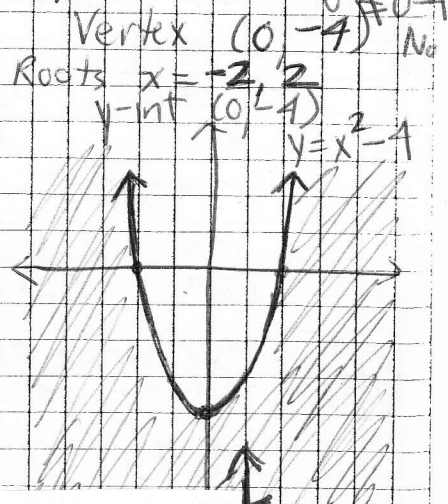


⑧  $|x| \geq 1$

$x \geq 1$  OR  $x \leq -1$

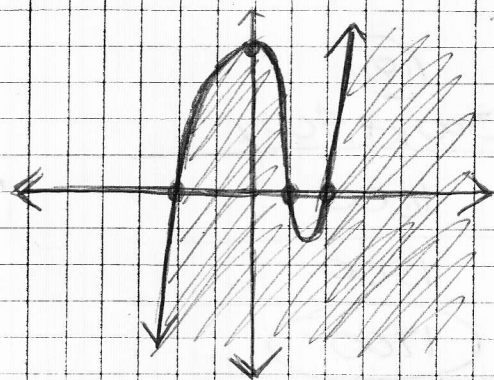


⑨  $y \leq x^2 - 4$



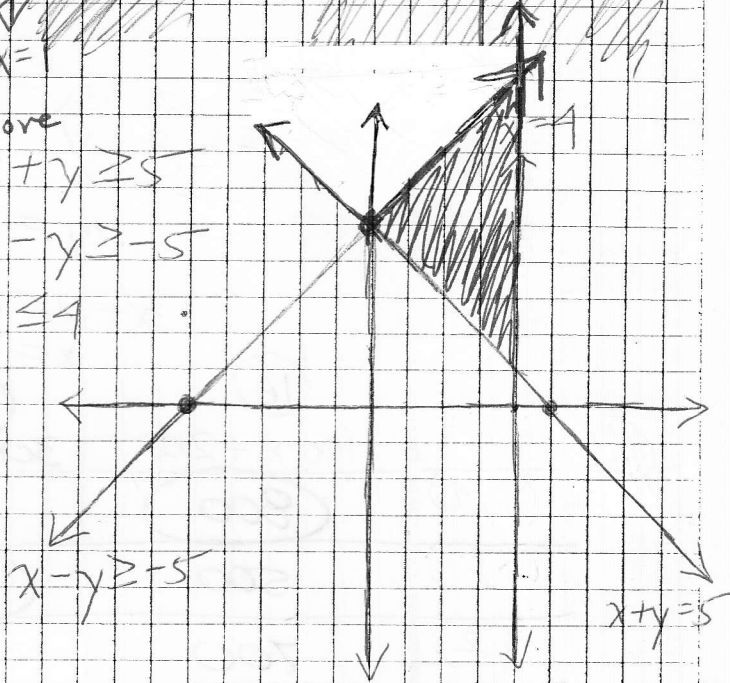
⑩  $y \leq (x-1)(x+2)(x-2)$

Roots  $x = 1, -2, 2$   
 $y$ -int  $(0-1)(0+2)(0-2) = 4$



Test  $(0, 0)$   
 $0 \leq (-1)(2)(-2)$   
 $0 \leq 4$  Yes

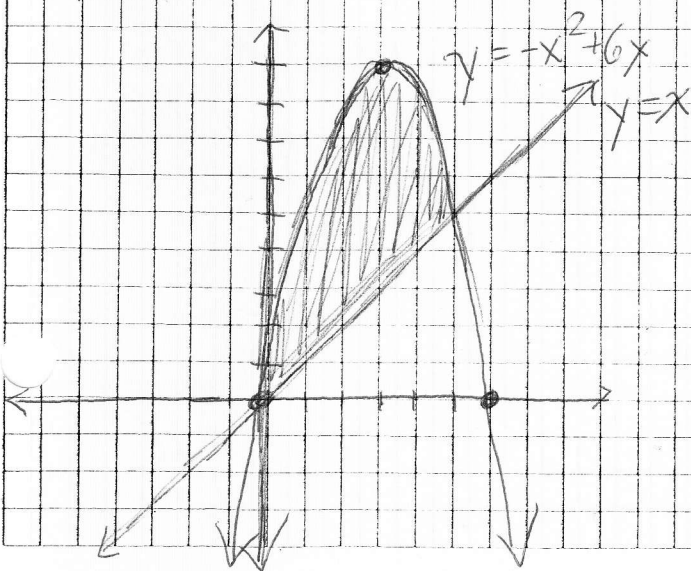
⑪ Above  $x + y \geq 5$   
 Below  $x - y \geq -5$   
 Left  $x \leq 4$



⑫  $y \leq -x^2 + 6x$   
 $-x(x-6)$

Roots  $x = 0$   $x = 6$   
 Vertex  $\frac{-6}{2(-1)} = 3$

$y = -(3)^2 + 6(3) = 9$   $(3, 9)$



⑬  $x \geq 0$   
 $y \geq 0$   
 $x \leq 4$   
 $y \leq 3$   
 $y \leq -x + 6$

Find line  $(3, 3)$   $(4, 2)$

$m = \frac{2-3}{4-3} = -1$

$y = -x + b$

$3 = -3 + b$

$6 = b$

$y = -x + 6$

14

$$2x + 3y \leq 12$$

$$2x = 12$$

$$x = 6$$

$$(6, 0)$$

$$3y = 12$$

$$y = 4$$

$$(0, 4)$$

$$x + y \leq 5$$

$$x = 5$$

$$(5, 0)$$

$$y = 5$$

$$(0, 5)$$

15

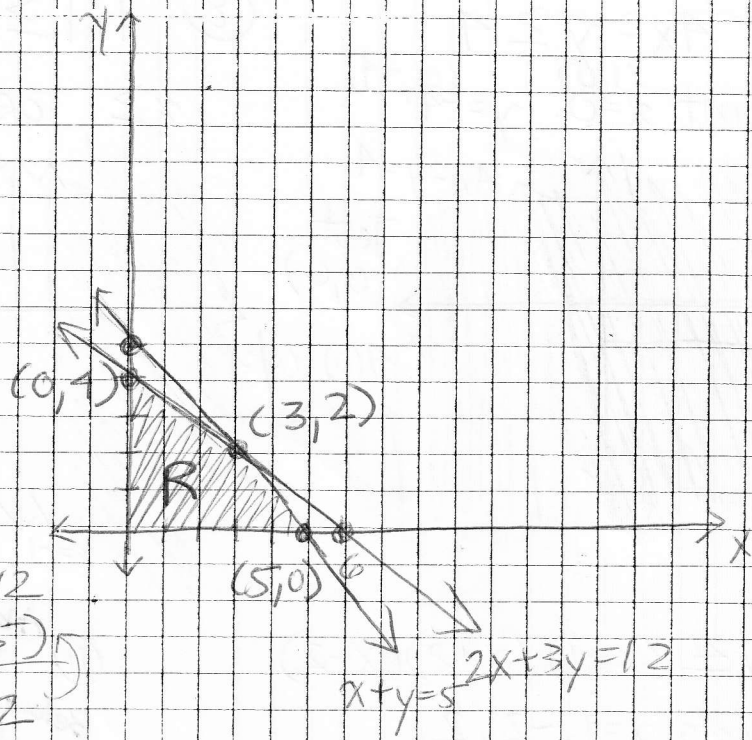
vertices are corner points

$$(0, 4)$$

$$(5, 0)$$

$$(3, 2)$$

$$(0, 0)$$



$$2x + 3y = 12$$

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

$$\hline y = 2$$

$$x + 2 = 5$$

$$x = 3$$

16

$$100x + 200y$$

$$(0, 4)$$

$$800$$

$$(5, 0)$$

$$500$$

$$(3, 2)$$

$$700$$

$$(0, 0)$$

$$0$$

$$(0, 4)$$
  

$$800$$

Max

17

$$300x + 200y$$

$$800$$

$$1500$$

$$1300$$

$$0$$

$$(5, 0)$$
  

$$1500$$

Max

18

$$300x + 400y$$

$$1600$$

$$1500$$

$$1700$$

$$0$$

$$(3, 2)$$
  

$$1700$$

Max