

For each inequality, name the vertex, direction of opening, whether the line drawn is dashed or solid, and if the shaded region is above or below.

1)  $y > -3x^2 + 3x - 11$      $x = \frac{-b}{2a} = \frac{-3}{2(-3)} = \frac{-3}{-6} = \frac{1}{2}$   
 $y = -3(1/2)^2 + 3(1/2) - 11$   
 $= -3(1/4) + 3/2 - 11$   
 $= -10.25$

Vertex: (0.5, -10.25)

Opening: down

Line: dashed

Shade: above

2)  $f(x) \leq 2|x - 9| + 5$

Vertex: (9, 5)

Opening: up

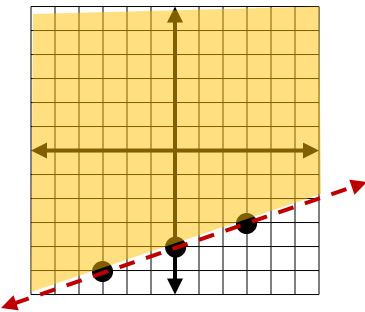
Line: solid

Shade: below

Graph each inequality.

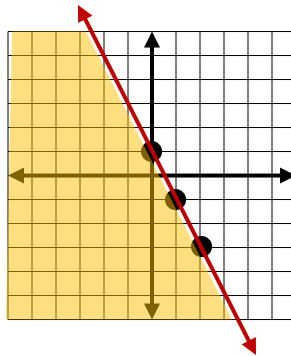
3)  $y > \frac{1}{3}x - 4$

$m = 1/3$   
 $b = -4$



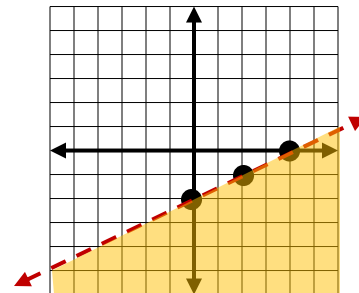
4)  $f(x) \leq -2x + 1$

$m = -2$   
 $b = 1$



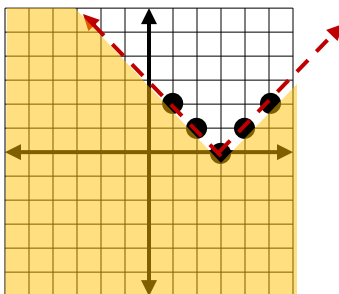
5)  $8 + 4y < 2x$

$4y < 2x - 8$      $m = 1/2$   
 $y < 1/2x - 2$      $b = -2$



6)  $y < |x - 3|$

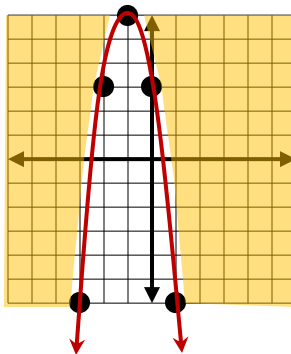
$V = (3, 0)$   
 $m = 1/1$



7)  $y \geq -3(x + 1)^2 + 6$

$V = (-1, 6)$   

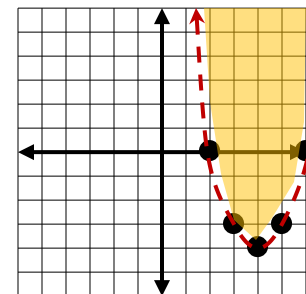
$x$	$y$
0	3
1	-6



8)  $g(x) > x^2 - 8x + 12$

$x = \frac{-b}{2a} = \frac{8}{2(1)} = \frac{8}{2} = 4$

$y = 4^2 - 8(4) + 12 = 16 - 32 + 12$   
 $= -4$



$V = (4, -4)$   

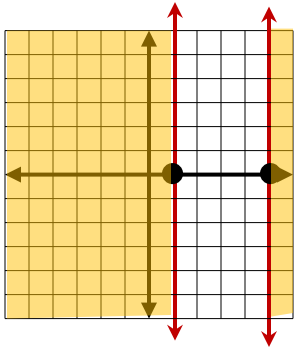
$x$	$y$
5	-3
6	0

Graph each compound inequality.

9)  $|x - 3| \geq 2$

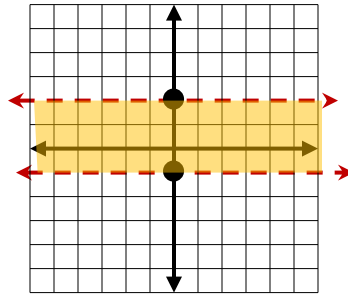
$$x - 3 \geq 2 \text{ or } x - 3 \leq -2$$

$$x \geq 5 \quad \text{or} \quad x \leq 1$$



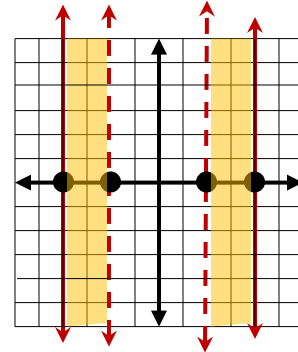
10)  $-1 < y < 2$

$$y > -1 \text{ and } y < 2$$



11)  $2 < |x| \leq 4$

$|x| > 2$  and  $|x| \leq 4$   
 $x > 2$  or  $x < -2$  and  $x \leq 4$  and  $x \geq -4$   
 shade outside                      shade between  
 where do the two shaded regions intersect?

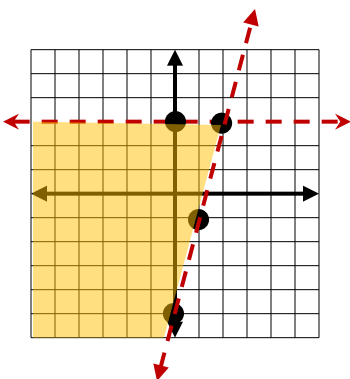


Graph each system of inequalities.

12)  $y < 3$   
 $y > 4x - 5$

$$m = 4$$

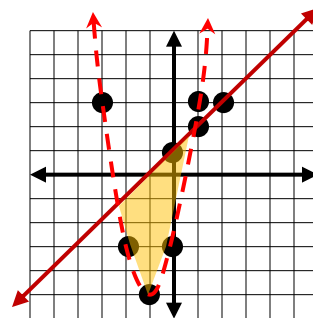
$$b = -5$$



14)  $y \leq x + 1$   
 $y > 2x^2 + 4x - 3$   
 $x = \frac{-b}{2a} = \frac{-4}{2(2)} = \frac{-4}{4} = -1$   
 $y = 2(-1)^2 + 4(-1) - 3$   
 $= 2 - 4 - 3$   
 $= -5$

$$V = (-1, -5)$$

x	y
0	-3
1	3



15)  $-2 \leq y \leq 5$   
 $2y > 4x + 5$   
 $y < -2|x| + 5$

$$2y > 4x + 5$$

$$y > 2x + 2.5$$

$$m = 2, b = 2.5$$

$$y < -2|x| + 5$$

$$V = (0, 5)$$

$$m = -2$$

