3-3

Practice

Graphs of Nonlinear Inequalities

Determine whether the ordered pair is a solution for the given inequality. Write yes or no.

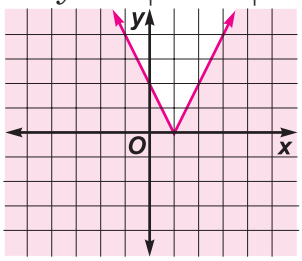
1. $y > (x + 2)^2 + 3, (-2, 6)$ yes

2. $y < (x - 3)^3 + 2, (4, 5)$ no

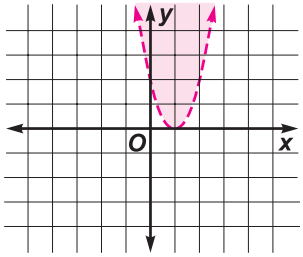
3. $y \leq |2x - 4| - 1, (-4, 1)$ yes

Graph each inequality.

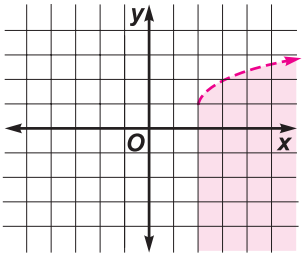
4. $y \leq 2|x - 1|$



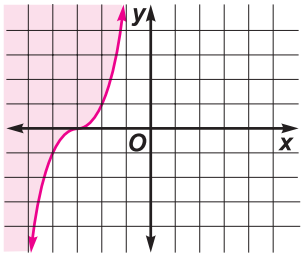
5. $y > 2(x - 1)^2$



6. $y < \sqrt{x - 2} + 1$



7. $y \geq (x + 3)^3$



Solve each inequality.

8. $|4x - 10| \leq 6$ $\{x \mid 1 \leq x \leq 4\}$

9. $|x + 5| + 2 > 6$ $\{x \mid x < -9 \text{ or } x > -1\}$

10. $|2x - 2| - 1 < 7$ $\{x \mid -3 < x < 5\}$

11. ***Measurement*** Instructions for building a birdhouse warn that the platform, which ideally measures 14.75 cm^2, should not vary in size by more than 0.30 cm^2. If it does, the preconstructed roof for the birdhouse will not fit properly.

a. Write an absolute value inequality that represents the range of possible sizes for the platform. Then solve for x to find the range.
$|x - 14.75| \leq 0.30$; $\{x \mid 14.45 \leq x \leq 15.05\}$

b. Dena cut a board 14.42 cm^2. Does the platform that Dena cut fit within the acceptable range? no