6.1 Solving Quadratic Inequalities

x^2 $\leq, <, \geq, >$ } greater / less

Determine the x-interval(s) where the graph is above (greater) or below (less) the x-axis.

greater - positive
less than - negative

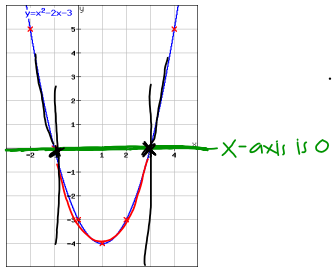
Dec 15-9:40 AM

4pt: 5.3, 5.4, Review
10pt: Quiz 5.1, 5.2
50pt: test

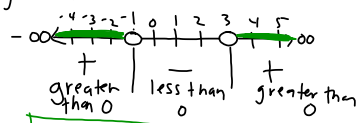
Retake unit test by Friday 2/5
- corrections on units test

Feb 2-11:46 AM

Where is the graph greater than 0



Sign chart $x=-1$ $x=3$



$(-\infty, -1) \cup (3, \infty)$

Dec 15-9:44 AM

Step 1: Find the x-intercepts
a) Factor
b) Quadratic Formula
c) complete the square
d) graph

Step 2: Draw a number line and mark the intercepts
Make a sign chart

Step 3: Test points
determine +, −

Step 4: write answer in interval notation
from left to right
$\leq, \geq$ ● bracket
$<, >$ ○ parenthesis

Dec 15-9:50 AM

Solve: $3x^2 - 16x + 5 \leq 0$
closed circle
less (−)

Step 1: Factor to find x-intercepts
check in calc

$3x^2 - 16x + 5$ (−1, 15, −15, −16)

$(3x - 1)(x - 5)$

$(3x - 1)\left(\frac{3x}{3} - \frac{15}{3}\right)$

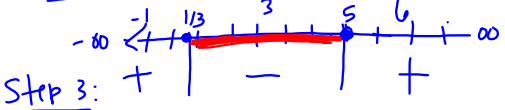
$(3x - 1)(x - 5)$

$3x - 1 = 0$ $\quad x - 5 = 0$
$+1 \quad +1$ $\quad +5 \quad +5$
$\frac{3x}{3} = \frac{1}{3}$ $\quad x = 5$

$x = \frac{1}{3}$

Dec 15-9:55 AM

Step 2: Make a sign chart



Step 3:

Step 4: write in interval notation

$\left[\frac{1}{3}, 5\right]$

Feb 2-12:09 PM

(2) $-x^2-2x+8 \leq 0$ ... less than

$-1(x^2+2x-8) \leq 0$ (÷ −1)

$x^2+2x-8 \geq 0$

Step 1: x^2+2x-8 (−4, 2)

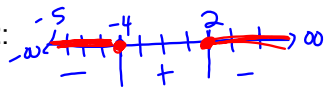
$(x+4)(x-2)$

$x+4=0$ $x-2=0$

$-4\ -4$ $x=2$

$x=-4$

Dec 15-10:08 AM

Step 2: 

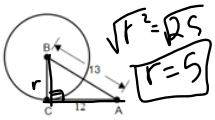
≤ less

Step 3: test points

Step 4: $(-\infty, -4] \cup [2, \infty)$

Dec 15-10:00 AM

Example 1:

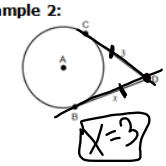


$r^2=25$ $r=5$

$r^2+12^2=13^2$

$-12^2\ -12^2$

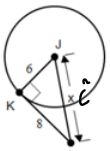
Example 2:



$x=3$

Now your turn.

1:

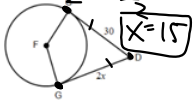


$6^2+8^2=x^2$

$\sqrt{100}=\sqrt{x^2}$

$10=x$

2.



$2x=30$

$x=15$

Dec 15-10:15 AM

Theorem 1: The tangent line and the radius form a 90° angle

Theorem 2: The distance from the point of tangency (touches the circle) to the intersection of two tangent lines is equal

Feb 2-12:52 PM