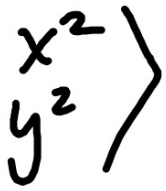
Precalc 10.8

Graph and solve 2nd degree systems



equation

inequality

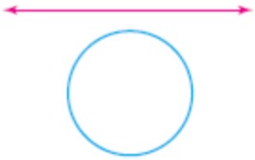
2nd degree

test point

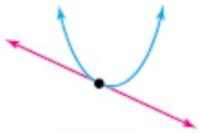
activity: toothpicks and curves
curves and curves

graphing calculator solutions

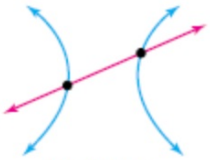
toothpicks



no solution



1 solution



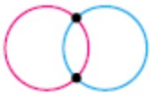
2 solutions

$x = \pm$

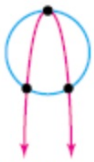
$y = \pm$

no solution

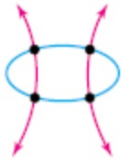
1 solution



2 solutions



3 solutions



4 solutions

1 a. Graph the system of equations. Use the graph to find approximate solutions.

b. Solve the system algebraically.

$9x^2 + 25y^2 = 225$

$x^2 + y^2 - 2x = 15$

$x = 5 \quad x = -1.875$ (5,0)

$9 \cdot 5^2 + 25y^2 = 225$ (-1.875, 2.78)

$225 + 25y^2 = 225$ (-1.875, -2.78)

$-225 \quad -225$

$\frac{25y^2}{25} = \frac{0}{25}$ $\sqrt{y^2} = \sqrt{0}$ $y = \pm 0$ $y = 0$

$9(-1.875)^2 + 25y^2 = 225$

$-25y^2 - 25y^2 + 50x = -375$

$31.640625 + 25y^2 = 225$

$-16x^2 + 50x = -150$

$25y^2 = 4.933594$

$y^2 = 7.734375$

$y = \pm 2.78$

$\frac{-16x^2}{-2} + \frac{50x}{-2} + \frac{150}{-2} = \frac{0}{-2}$

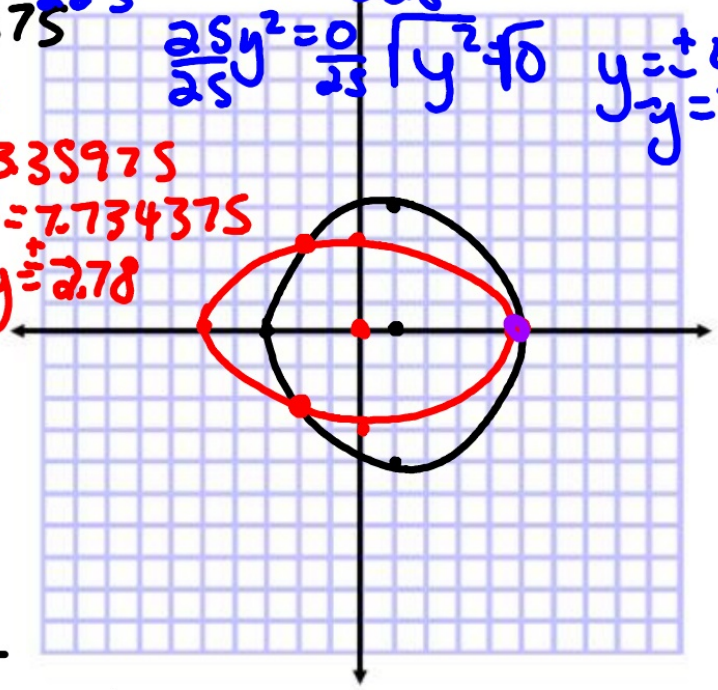
$8x^2 - 25x - 75 = 0$

$x = \frac{25 \pm \sqrt{25^2 - 4 \cdot 8 \cdot -75}}{16}$

$x = \frac{25 \pm \sqrt{625 + 2408}}{16}$

$x = \frac{25 \pm 55}{16} = 5$

$= -1.875$



$x = 5$

$x = -1.875$

(number sold)(price) = income

x= number sold
y= price

2 **SALES** During the month of January, Photo World collected $2700 from the sale of a certain camera. After lowering the price by $15, the store sold 30 more cameras and took in $3375 from the sale of this camera the next month.

$13 - 4\cancel{X}0$

$13 - 35_0$

Standard form
Test point & shade

3 Graph the solutions for the system of inequalities.

$x^2 + y^2 \leq 4$

$x^2 > y^2 + 1$

$0 \leq 4$

$0 > 1$

$\frac{x^2}{4} + \frac{4y^2}{4} = \frac{4}{4}$

$\frac{x^2}{4} + \frac{y^2}{1} = 1$

$x^2 = y^2 + 1$

$\frac{x^2}{1} - \frac{y^2}{1} = 1$