

Precalc 10.8

Graph and solve 2nd degree systems

equation            =     $(x, y)$

inequality         $\geq > < \leq$     Shading

2nd degree        at least  $x^2$

test point

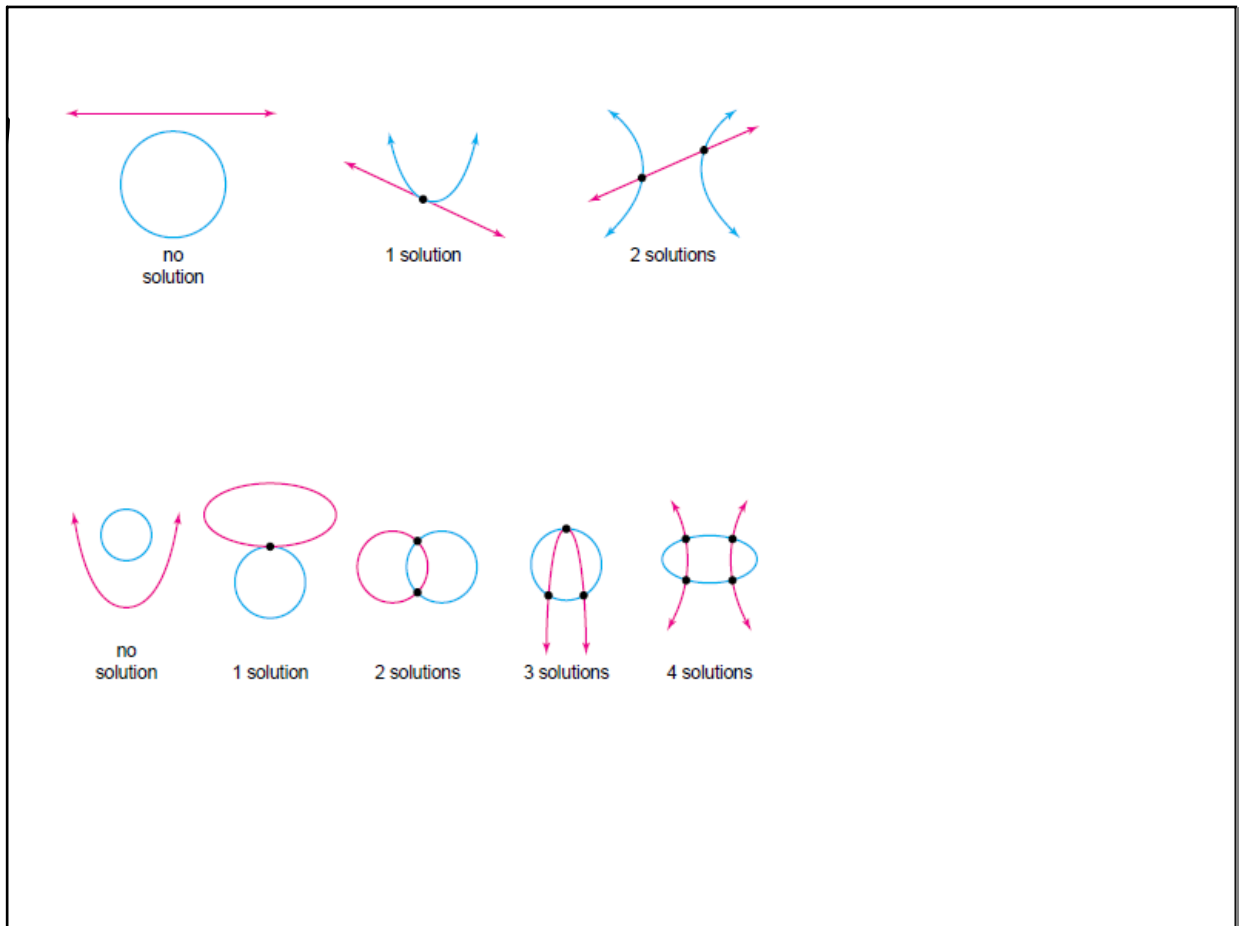
activity: toothpicks and curves  
curves and curves

graphing calculator solutions

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toothpicks

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Standard form: sketch/graph (estimate)

probably awkward to use technology

General form: solving (elim & subs)

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

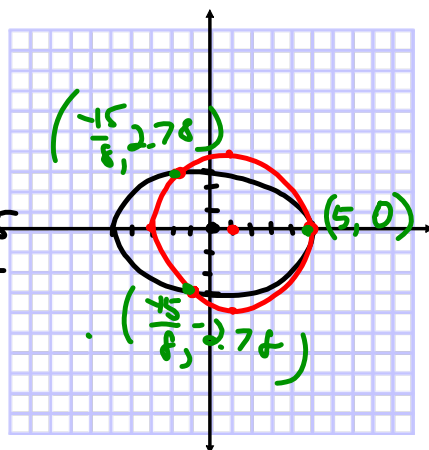
b. Solve the system algebraically.

$$\begin{aligned} 9x^2 + 25y^2 &= 225 \\ x^2 + y^2 - 2x &= 15 \end{aligned}$$

$$\begin{aligned} 9x^2 + 25y^2 &= 225 \\ -25x^2 - 25y^2 + 50x &= -375 \\ \hline -16x^2 + 50x &= -150 \\ -16x^2 + 50x + 150 &= 0 \\ -8x^2 + 25x + 75 &= 0 \end{aligned}$$

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

$$x = \frac{-25 \pm \sqrt{625 + 2400}}{-16} = \frac{-25 \pm 55}{-16} = \frac{30}{-16} = -\frac{15}{8}$$



$$\frac{-80}{-16} = 5$$

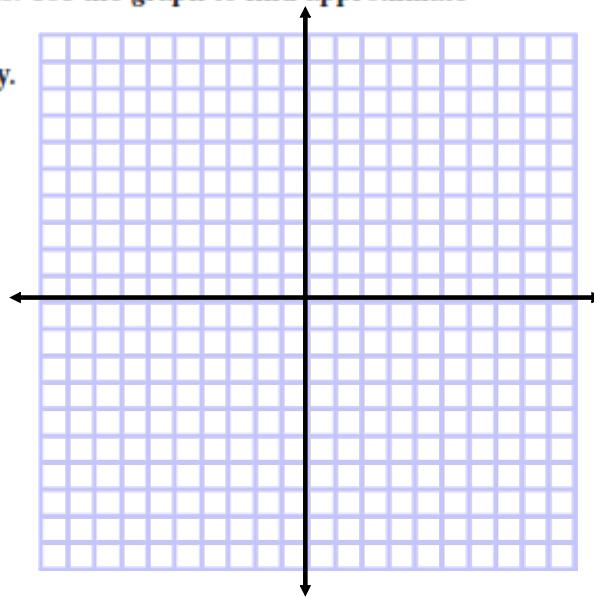
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**1** a. Graph the system of equations. Use the graph to find approximate solutions.

b. Solve the system algebraically.

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

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



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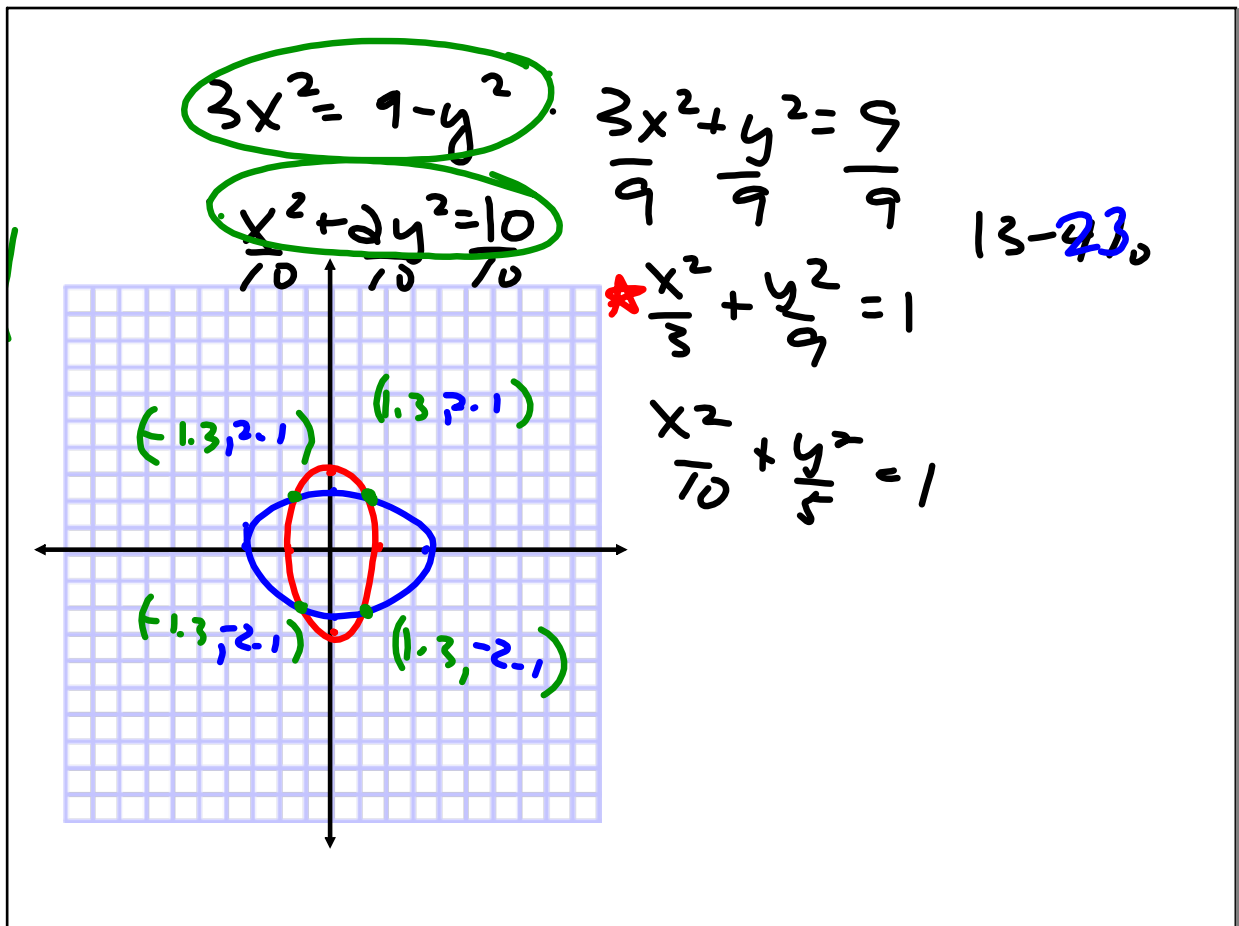
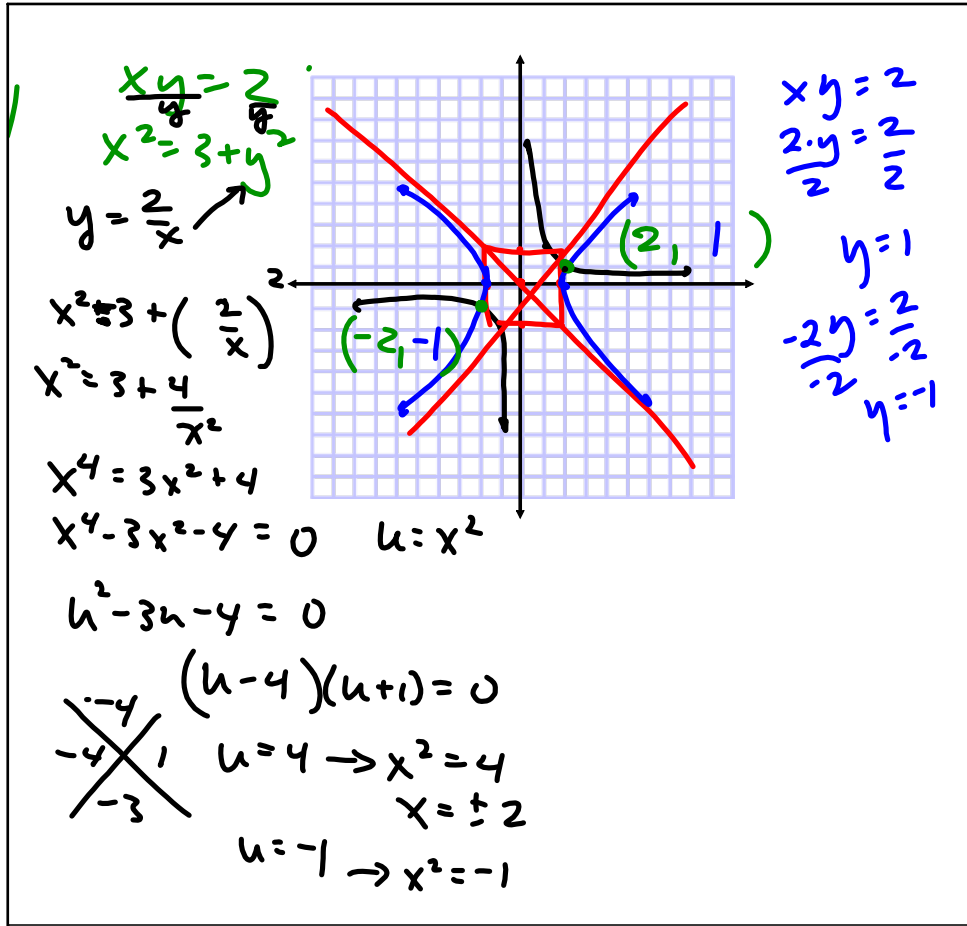
(number sold)(price) = income

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.

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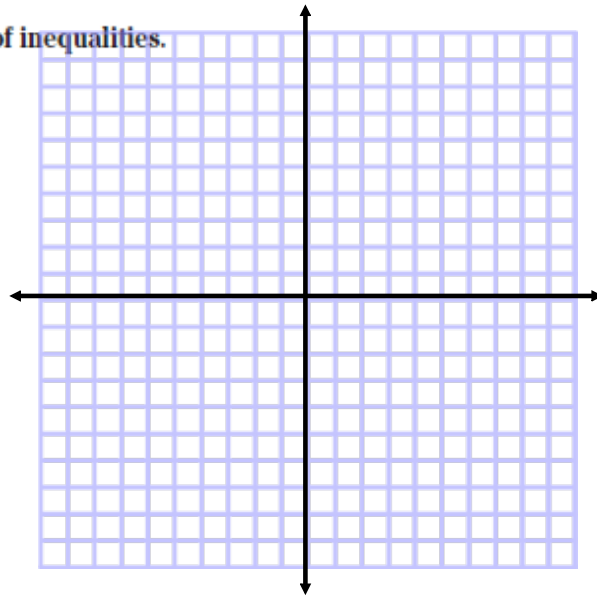
Standard form

Test point & shade

**3** Graph the solutions for the system of inequalities.

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

$$x^2 > y^2 + 1$$



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