

Algebra 2 3.5 Solving Nonlinear Systems

Pg. 136 [3-5, 11, 12, 15-17, 27-29]

$\boxed{3}$ $y = x + 2 \rightarrow$ line slope = 1, y-int = 2
 $y = .5(x+2)^2 \rightarrow$ Quadratic Vertex: (-2, 0)
 a-value = .5
 1a, 3a, 5a
 .5, 1.5, 2.5
 graph #1 (0, 2)

$\boxed{4}$ $\begin{cases} y = (x-3)^2 + 5 \\ y = 5 \end{cases}$
 \rightarrow Quadratic Vertex (3, 5) a-value = 1
 \rightarrow line "spectral" \longleftrightarrow $\frac{1}{1}, \frac{3}{1}, \frac{5}{1}$
 graph #2 (3, 5)

$\boxed{5}$ $y = \frac{1}{3}x + 2 \rightarrow$ line slope = $\frac{1}{3}$ y-int = 2
 $y = -3x^2 - 5x - 4 \rightarrow$ Quadratic standard form
 a = -3 b = -5 c = -4
NO SOLUTIONS

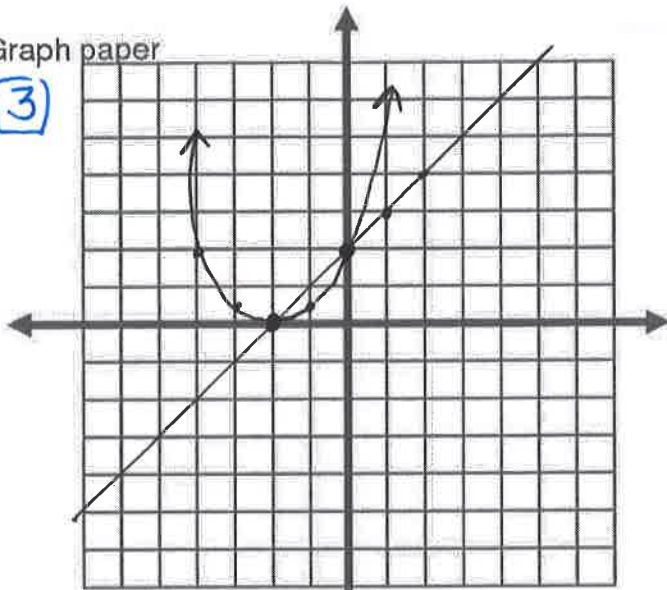
vertex $-\frac{b}{2a} = \frac{5}{2(-3)} = \frac{5}{-6} = -\frac{5}{6}$ Vertex $(-\frac{5}{6}, -1.92)$
 y-part $-3(-\frac{5}{6})^2 - 5(-\frac{5}{6}) - 4$ $(-.83, -1.92)$
 calc. $-3(\frac{25}{36}) + \frac{25}{6} - 4$ a-value = -3
 $-2.083 + 4.1667 - 4 = -1.92$ 1a, 3a
 $\frac{-3}{1} \frac{-9}{1}$

$\boxed{11}$ From graph
 one solution
(-4, 1)

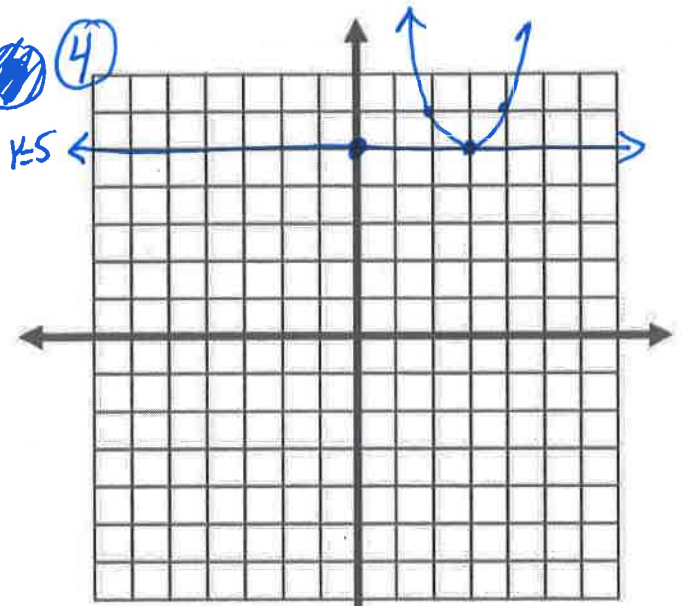
$\boxed{12}$ From graph
NO SOLUTIONS

Graph paper

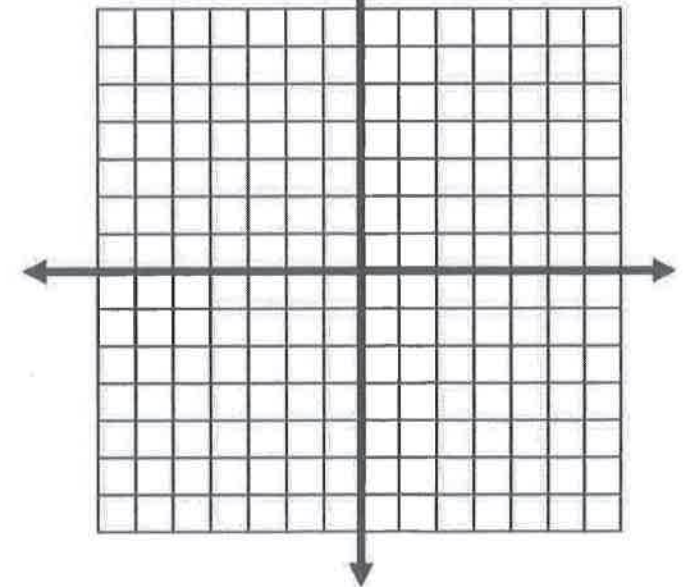
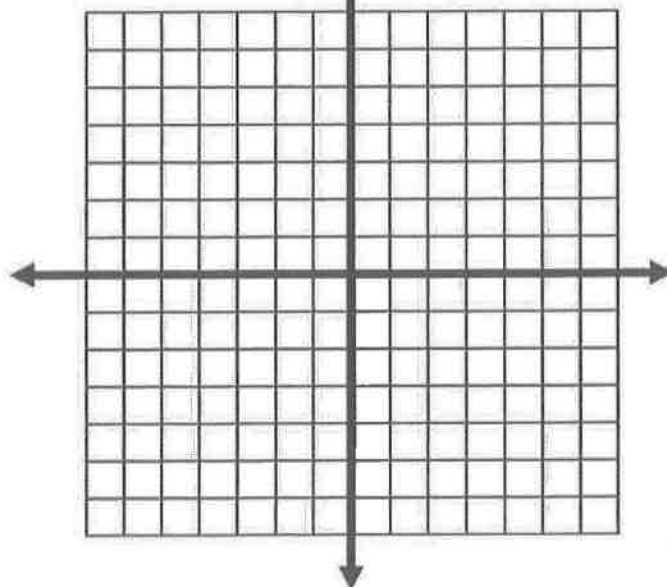
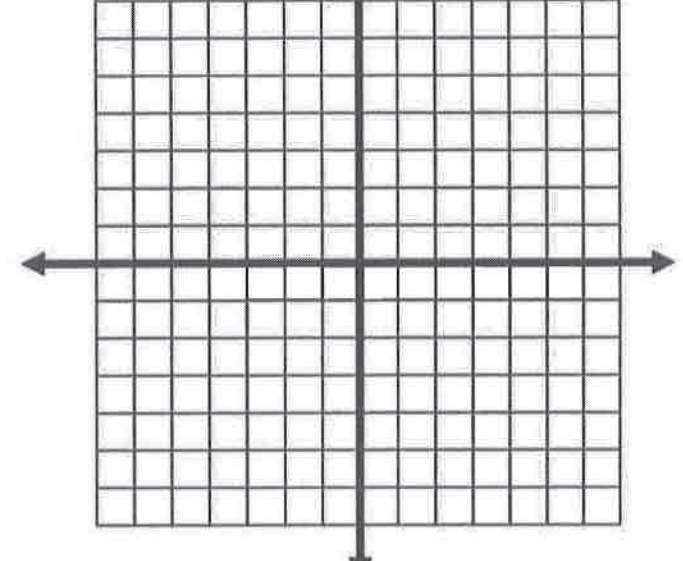
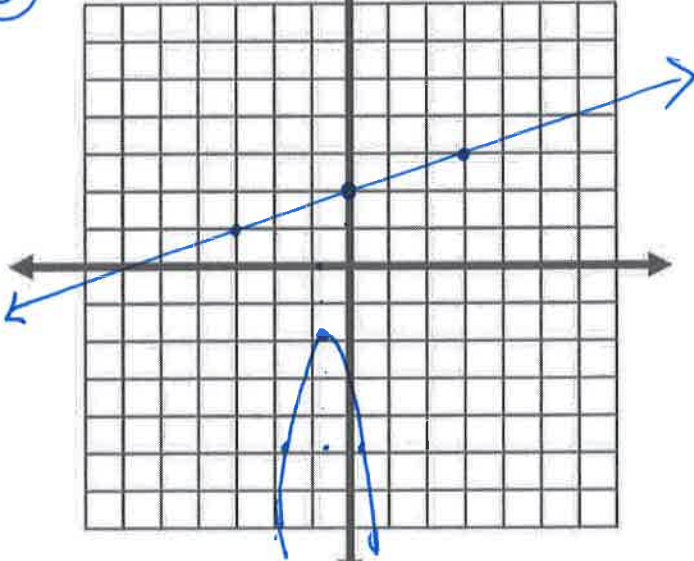
3



4



5



15

$$\begin{cases} y = x+5 \\ y = x^2 - x + 2 \end{cases}$$

Y-parts

$$Y = x+5$$

$$x=3$$

$$x=-1$$

$$Y = 3+5$$

$$Y = -1+5$$

$$Y = 8$$

$$Y = 4$$

$$(3, 8)$$

$$(-1, 4)$$

Set =
to 0

$$\begin{array}{r} x+5 = x^2-x+2 \\ -x \quad -5 \quad \quad -x \quad -5 \end{array}$$

$$x^2 - 2x - 3 = 0$$

$$(x-3)(x+1) = 0$$

$$x-3=0$$

$$x+1=0$$

$$x=3$$

$$x=-1$$

16

$$\begin{cases} x^2 + y^2 = 49 \\ y = 7-x \end{cases}$$

Y-parts

$$y = 7-x$$

$$x=0$$

$$x=7$$

$$y = 7-0$$

$$y = 7-7$$

$$y = 7$$

$$y = 0$$

$$(0, 7)$$

$$(7, 0)$$

$$x^2 + (7-x)^2 = 49$$

Foil

$$(7-x)(7-x)$$

$$49 - 7x - 7x + x^2$$

$$x^2 + 49 - 14x + x^2 = 49$$

$$2x^2 - 14x + 49 = 49$$

$$\begin{array}{r} -49 \quad -49 \end{array}$$

$$2x^2 - 14x = 0$$

$$2x(x-7) = 0$$

$$2x=0 \quad x-7=0$$

$$x=0 \quad x=7$$

$$(17) \begin{cases} x^2 + y^2 = 64 \\ y = -8 \end{cases}$$

$$(0, -8)$$

$$\textcircled{00} \quad x^2 + (-8)^2 = 64$$

$$x^2 + 64 = 64$$

$$\sqrt{x^2} = \sqrt{0}$$

$$x = 0$$

$$(27) \begin{cases} 2x^2 - 3x - y = -5 \\ -x + y = 5 \end{cases}$$

Perfect $-y$

y-parts

$$-x + y = 5$$

$$\underline{x=0}$$

$$\underline{x=2}$$

$$0 + y = 5$$

$$-(2) + y = 5$$

$$y = 5$$

$$y = 7$$

$$\text{no sol} \quad (0, 5) \quad (2, 7)$$

Solve

$$2x^2 - 4x = 0$$

$$2x(x-2) = 0$$

$$2x = 0 \quad x - 2 = 0$$

$$x = 0 \quad x = 2$$

$$(29) \begin{cases} -3x^2 + y = -18x + 29 \\ -3x^2 - y = 18x - 25 \end{cases}$$

$$\frac{-6x^2}{-6} = \frac{4}{-6}$$

$$\sqrt{x^2} = \sqrt{-\frac{2}{3}} \quad \text{imag.}$$

NO SOLUTIONS