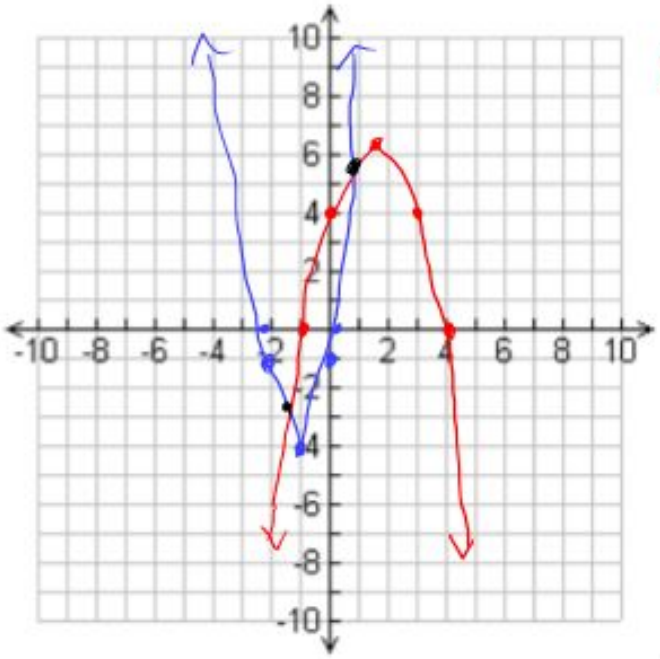
Give answer(s) to 1 decimal place. *[Answer with points: (x, y)]*

① $y = -x^2 + 3x + 4$ ② $y = 3(x+1)^2 - 4$



Graphing solution (0.8, 5.8), (−1.3, −2.5)

① y-int: $y = -(0)^2 + 3(0) + 4$

$y = 4$ (0, 4)

x-int: $0 = -x^2 + 3x + 4$

$0 = -(x^2 - 3x - 4)$ ⊗ −4 (−4, 1)

⊕ −1 −1

$0 = -(x-4)(x+1)$

$x = 4$ (4, 0) $x = -1$ (−1, 0)

Vertex: $h = \frac{-b}{2a} = \frac{-3}{2(-1)} = \frac{3}{2}$

$k = -\left(\frac{3}{2}\right)^2 + 3\left(\frac{3}{2}\right) + 4 = 6.25$

(1.5, 6.25)

② vertex (−1, −4)

y-int: $y = 3(0+1)^2 - 4$

$= 3 \cdot 1 - 4$

$= -1$ (0, −1)

x-int: $0 = 3(x+1)^2 - 4$

$\frac{4}{3} = (x+1)^2 \Rightarrow x+1 = \pm\sqrt{\frac{4}{3}} \Rightarrow x = -1 \pm \sqrt{\frac{4}{3}} = 0.155, -2.155$

[Answer with points: (x, y)]

$y = -x^2 + 3x + 4$ $\quad$ $y = 3(x+1)^2 - 4$

$-x^2 + 3x + 4 = 3(x+1)^2 - 4$

$-x^2 + 3x + 4 = 3(x^2 + 2x + 1) - 4$

$-x^2 + 3x + 4 = 3x^2 + 6x + 3 - 4$

$0 = 4x^2 + 3x - 5$

$a = 4$
$b = 3$
$c = -5$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(3) \pm \sqrt{(3)^2 - 4(4)(-5)}}{2(4)}$

$x = \frac{-3 \pm \sqrt{9+80}}{8} = 0.80425, -1.5542$

x_1 $\quad$ x_2

x_1: $y = -(0.80425)^2 + 3(0.80425) + 4 = 5.77$

x_2: $y = -(-1.5542)^2 + 3(-1.5542) + 4 = -3.08$

(0.80, 5.77)
(-1.55, -3.08)

3. Draw a picture to show each of the different possible number of solutions to the system:

$y = ax^2 + bx + c$ $\quad$ $y = dx + e$