

Transform the following equations into plotting form and plot.

$$y = 2x - 3$$

$$y = -x^2 + 4$$

Find the intercepts of all the functions.

Transform the following equations into plotting form and plot.

$$y = 2x^2$$

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

Find the intercepts of all the functions.

Transform the following equations into plotting form and plot.

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

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

Find the intercepts of all the functions.

equation (1) already in plotting form.

equation (2)

further:

let

$$-x^2 + 4 = a(x-h)^2 + k$$

$$-x^2 + 4 = ax^2 - 2ahx + ah^2 + k$$

$$y = -x^2 + 4$$

$$= -(x-2)(x+2)$$

so

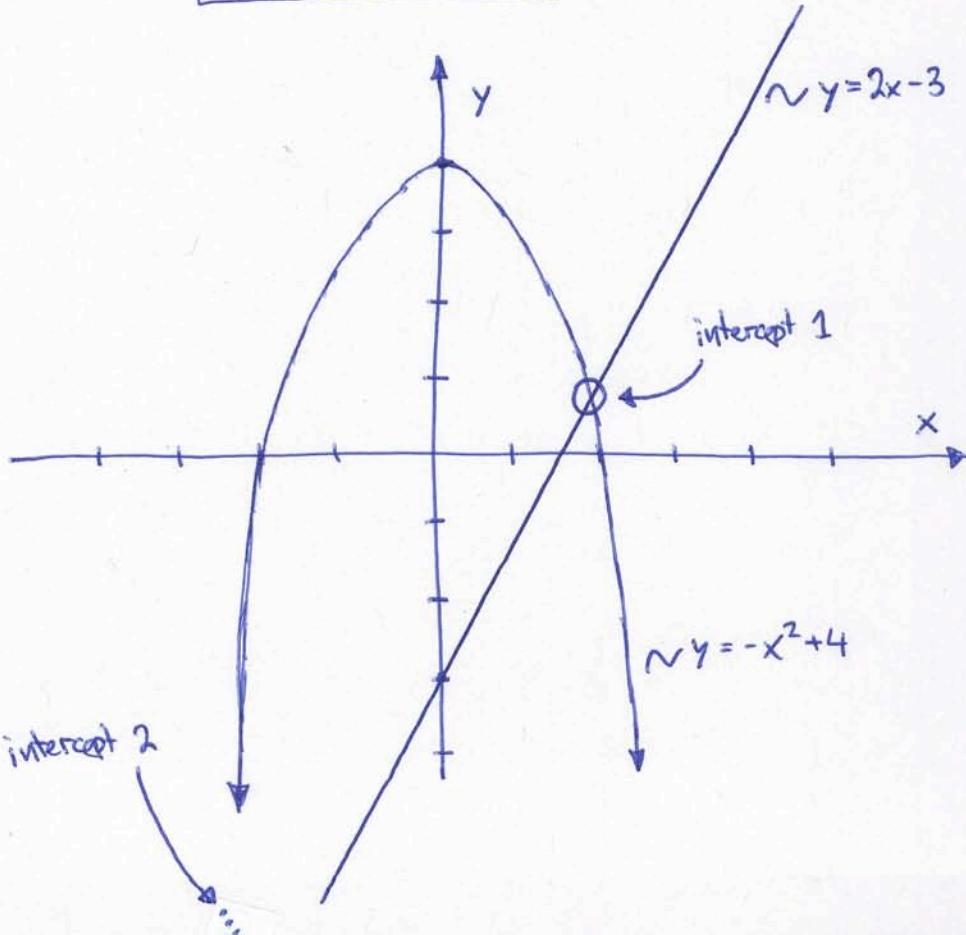
$$x^2: -1 = a \Rightarrow a = -1$$

$$x^1: 0 = -2ah \Rightarrow h = 0$$

$$x^0: 4 = ah^2 + k \Rightarrow k = 4$$

so

$$y = -(x-0)^2 + 4$$



Find intercepts:

sub (1) into (2)

$$[2x - 3] = -x^2 + 4$$

$$x^2 + 2x - 7 = 0$$

use quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2 \pm \sqrt{2^2 - (4)(1)(-7)}}{(2)(1)}$$
$$= -1 \pm 2.83$$
$$= 1.83, -3.83$$

determine y-values

$$y = 2(1.83) - 3 = 0.66$$

$$y = 2(-3.83) - 3 = -10.66$$

intercept 1:  $(1.83, 0.66)$   
intercept 2:  $(-3.83, -10.66)$

Transform the following equations into plotting form and plot.

$$y = 2x^2 \quad (1)$$

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

Find the intercepts of all the functions.

equation (1) plotting form:

$$y = 2(x-0)^2 + 0$$

equation (2)

let

$$-x^2 - 3x + 4 = a(x-h)^2 + k$$

$$-x^2 - 3x + 4 = ax^2 - 2ahx + ah^2 + k$$

so

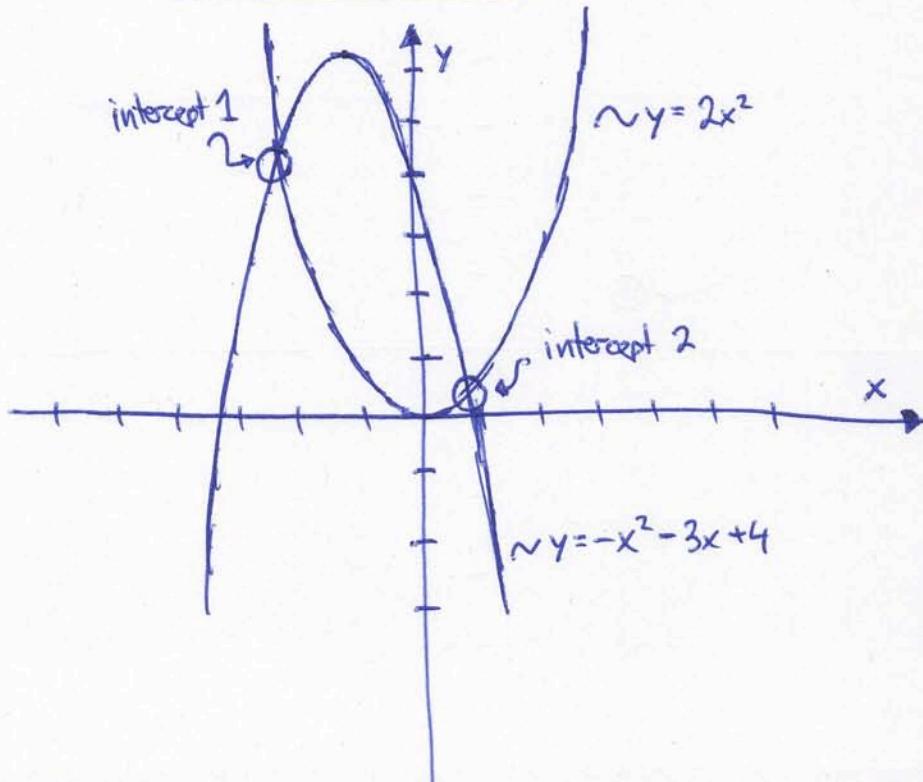
$$x^2: \quad -1 = a \quad \Rightarrow \quad a = -1$$

$$x^1: \quad -3 = -2ah \quad \Rightarrow \quad h = -1.5$$

$$x^0: \quad 4 = ah^2 + k \quad \Rightarrow \quad k = 6.25$$

so

$$y = -(x+1.5)^2 + 6.25$$



Find intercepts:

sub (1) into (2):

$$[2x^2] = -x^2 - 3x + 4$$

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

use quadratic formula:

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

$$= -0.5 \pm 1.26$$

$$= 0.76, -1.76$$

determine y-values:

$$y = 2(0.76)^2 = 1.16$$

$$y = 2(-1.76)^2 = 6.20$$

intercept 1:  $(-1.76, 6.20)$

intercept 2:  $(0.76, 1.16)$