Mindtrap!

Answer: Thursday

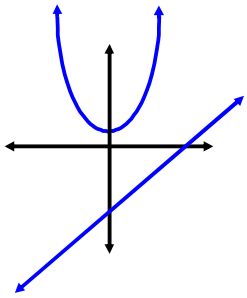
When the day after tomorrow is yesterday, today will be as far from Wednesday as today was from Wednesday when the day before yesterday was tomorrow. What is the day after this day?

Mar 8-11:23 AM

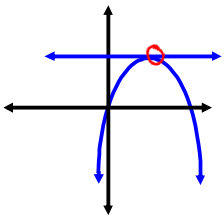
2.7 - Intersection of Lines and Quadratics

A system of equations consists of 2 or more equations. If the graphs are a straight line and quadratic (parabola), the system could have no solution, one solution, or two solutions.

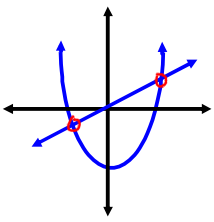
No Solution



One Solution



Two Solution



Method for solving algebraically:

1. Isolate one variable from the linear equation.
2. Sub into the quadratic
3. Solve for the remaining variable.
4. Sub answer(s) back into the linear equation to find the coordinate(s) of intersection, if they exist.

Mar 8-9:49 PM

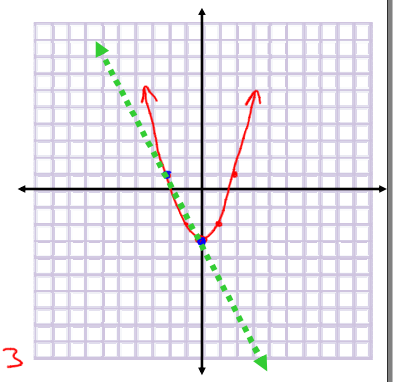
Ex 1 - Solve the system.

① $y = x^2 - 3$

② $2x + y = -3$

1. Isolate one variable from the linear equation.
2. Sub into the quadratic
3. Solve for the remaining variable.
4. Sub answer(s) back into the linear equation to find the coordinate(s) of intersection, if they exist.

Steps for solving algebraically



1/ $y = -2x - 3$ ③

2/ Sub ③ into ①

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

3/ $0 = x^2 + 2x$

$= x(x+2)$

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

4/ Sub into ②

$2(0) + y = -3$ $\quad 2(-2) + y = -3$

$y = -3$ $\quad y = 1$

$(0, -3)$ $\quad (-2, 1)$

∴ Solutions are $(0,-3)$ & $(-2,1)$

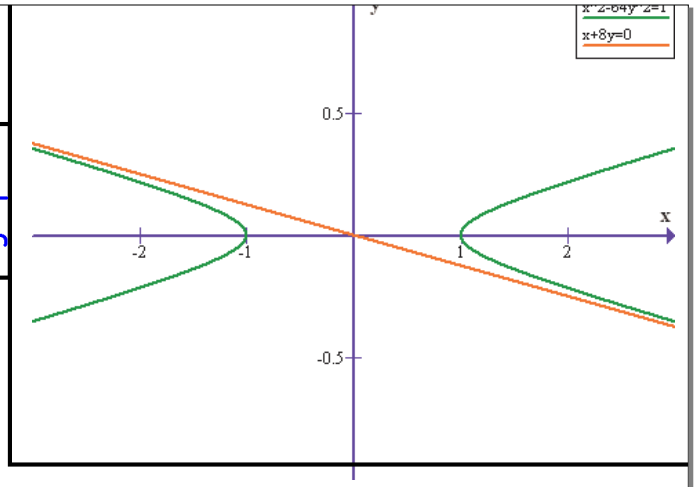
Mar 8-9:56 PM

Ex 2 - Solve the system.

① $x^2 - 64y^2 = 1$

② $x + 8y = 0$

graph



1/ $x = -8y$ ③

2/ $(-8y)^2 - 64y^2 = 1$

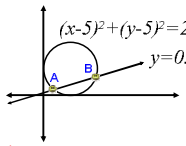
$64y^2 - 64y^2 = 1$

$0y^2 = 1$

∴ No solutions!

Mar 8-9:57 PM

Ex 3 - Find the length of the chord AB on the circle given the following information. (round to two decimal places)

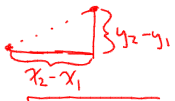


$(x-5)^2+(y-5)^2=25$ ①

$y=0.5x$ ②

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Distance of a line segment formula



$h=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Sub ② into ①

$(x-5)^2+(0.5x-5)^2=25$

$x^2-10x+25+0.25x^2-5x+25=25$

$1.25x^2-15x+25=0$

$1.25(x^2-12x+20)=0$

$1.25(x-10)(x-2)=0$

3/

$x=10$

$y=0.5(10)$

$=5$

$(10,5)$

$x=2$

$y=0.5(2)$

$=1$

$(2,1)$

$d=\sqrt{\Delta x^2+\Delta y^2}$

$=\sqrt{(10-2)^2+(5-1)^2}$

$=\sqrt{80}$

$\doteq 8.94$

The length of the chord is approx. 8.94 units

Mar 8-9:58 PM

Practice - p. 684 #1a, 3fi, 7, 9, 13

Mar 8-10:06 PM