

Some Worked OUT Week 9 Worksheet Examples

MTH 112

From Week 9

Monday 10-22-12

$$(35) \quad x^2 + y^2 - 3x + 15y + 14 = 0$$

$$x + y + 1 = 0$$

$$y = -x - 1$$

$$\begin{aligned} &(-x-1)(-x-1) \\ &x^2 + x + x + 1 \\ &x^2 + 2x + 1 \end{aligned}$$

$$x^2 + (-x-1)^2 - 3x + 15(-x-1) + 14 = 0$$

$$x^2 + x^2 + \underline{2x} + \underline{1} - \underline{3x} - \underline{15x} - \underline{15} + \underline{14} = 0$$

$$2x^2 - 16x = 0$$

$$2x(x-8) = 0$$

$$x = \{0, 8\}$$

$$x = 0$$

$$(0) + y + 1 = 0$$

$$y = -1$$

$$x = 8$$

$$(8) + y + 1 = 0$$

$$y = -9$$

$$\therefore (x, y) = \{(0, -1), (8, -9)\}$$



WolframAlpha[™] computational knowledge engine

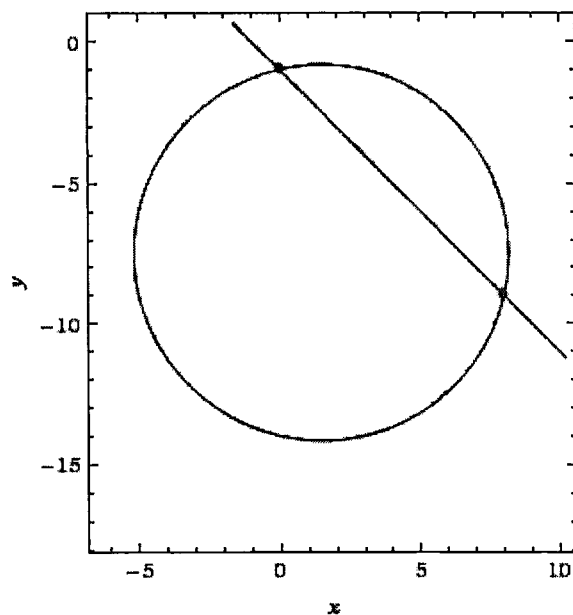
Plot $x^2+y^2-3x+15y+14=0$, $x+y+1=0$



Examples Random

Input interpretation:

Implicit plot:



— $x^2 - 3x + y^2 + 15y + 14 = 0$

— $x + y + 1 = 0$

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$$\begin{cases} X^2 - 10X + y + 12 = 0 \\ -9X^2 + 90X + y - 78 = 0 \end{cases}$$

(9)

$$9X^2 - 90X + 9y + 108 = 0$$

$$10y + 30 = 0$$

$$10y = -30$$

$$y = -3$$

$$\therefore X^2 - 10X + (-3) + 12 = 0$$

$$X^2 - 10X + 9 = 0$$

$$\text{sum} \Rightarrow -10$$

$$\text{prod} \Rightarrow 9$$

$$-1, -9 \therefore X = \{1, 9\}$$

$$(X, Y) = \{(1, -3), (9, -3)\}$$

see Wolfram Alpha Plot
on next pg.

Plot $x^2 - 10x + y + 12 = 0$, $-9x^2 + 90x + y - 78 = 0$



Examples Random

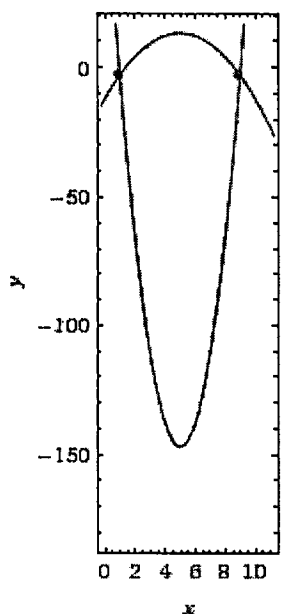
Input interpretation:

plot

$$x^2 - 10x + y + 12 = 0$$

$$-9x^2 + 90x + y - 78 = 0$$

Implicit plot:



$$- x^2 - 10 x + y + 12 = 0$$

$$- 9 x^2 + 90 x + y - 78 = 0$$

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