



Objective: Solve Quadratic-Linear Systems Algebraically

Homework QF-3 – NYA p. NY755 #13 – 18

Do Now: Two consecutive multiples of three have a product of 54. Find them.

Exam Prep: Which of the following represents the product of two consecutive multiples of 5?

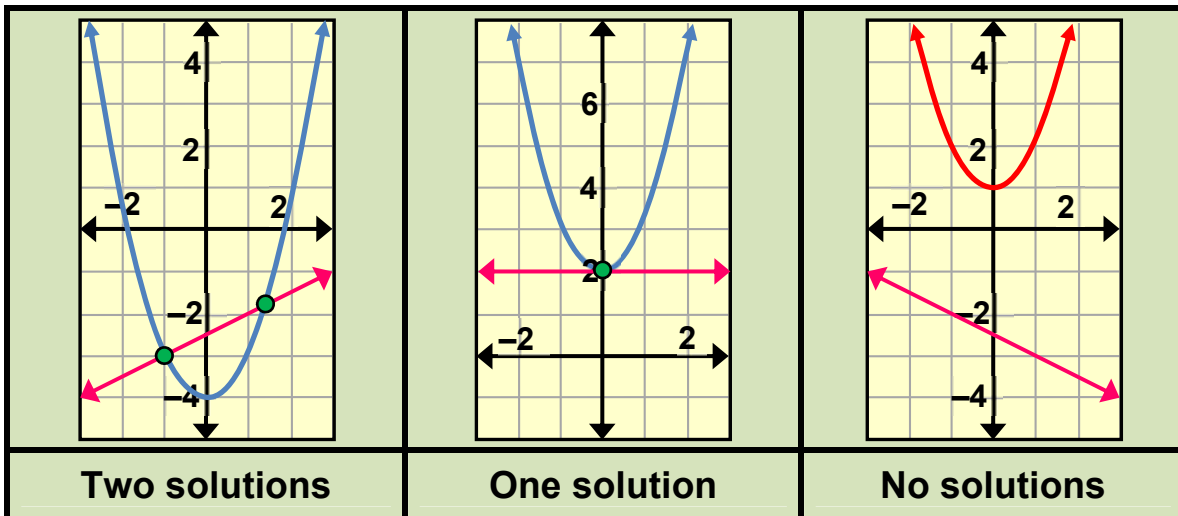
- A) $5x^2$ B) $(x + 1)(x + 5)$ C) $x^2 + 5$ D) $x^2 + 5x$



One big ugly system... or is it?? – Trust The Doctor, this looks a lot worse than it really is.

P.S. Graphing is coming later... for now its Algebraic Magic.

A linear-quadratic system has at least one of function. Recall that a solution occurs when the equations intersect. There can be two, one, or no solutions.



Solving Quadratic-Linear System: Algebra

$y = x^2 + 7x - 24$ $y = 10x + 16$	Original System.		
$y = 10x + 16$ $x^2 + 7x - 24 = 10x + 16$ $x^2 - 3x - 40 = 0$ $(x + 5)(x - 8) = 0$	Start with one equation. Substitute the other for y. Simplify so it equals zero (subtract 10x and 16) Use the zero-product property.		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;"> $(x + 5) = 0$ $x = -5$ </td> <td style="width: 50%; padding: 5px;"> $(x - 8) = 0$ $x = 8$ </td> </tr> </table>	$(x + 5) = 0$ $x = -5$	$(x - 8) = 0$ $x = 8$	Split and solve
$(x + 5) = 0$ $x = -5$	$(x - 8) = 0$ $x = 8$		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;"> $y = 10(-5) + 16$ $y = -34$ </td> <td style="width: 50%; padding: 5px;"> $y = 10(8) + 16$ $y = 96$ </td> </tr> </table>	$y = 10(-5) + 16$ $y = -34$	$y = 10(8) + 16$ $y = 96$	Substitute them in the original linear equation.
$y = 10(-5) + 16$ $y = -34$	$y = 10(8) + 16$ $y = 96$		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;"> $(-5, -34)$ </td> <td style="width: 50%; padding: 5px;"> $(8, 96)$ </td> </tr> </table>	$(-5, -34)$	$(8, 96)$	Two solutions
$(-5, -34)$	$(8, 96)$		

Practice

1. $y = x^2 + 2x - 4$ $y = x - 2$	2. $y = x^2 - 11x - 36$ $y = -12x + 36$	3. $y = x^2$ $y = 4$
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4. $y = x^2 - x - 90$
 $y = x + 30$

5. $y = 5x - 20$
 $y = x^2 - 5x + 5$

6. $y = x^2 + 11$
 $y = -12x$