

Watch. Practice. Understand. | Lesson 092

The Secret of Finding points of intersection of two functions on TI-84

Watch the matching video: <https://www.youtube.com/watch?v=9Pz11Fbzg4s>

Practice focus: Nonlinear systems

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Solve $x^2 + y^2 = 25$ and $y = 3$.

02 Solve $y = x^2$ and $y = 2x + 3$.

03 Solve $xy = 6$ and $x + y = 5$.

04 Explain why solving only $x^2 = 16$ as $x = 4$ can lose a solution.

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Practice focus: Graphing and fitting models

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Name: _____ Date: _____ Show your reasoning and check units.

05 The data are (0,2), (1,5), (2,8). Find an exact linear model and predict y at $x = 5$.

06 The data are (0,3), (1,6), (2,12). Find an exact exponential model.

07 A fitted model predicts 12.5 when the observed value is 14. Find the residual.

08 Use a graphing tool to find the intersections of $y = x^2$ and $y = x + 2$; then verify algebraically.

Worked answers | Lesson 092

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01 Solve $x^2 + y^2 = 25$ and $y = 3$.

$x^2 + 9 = 25$, so $x = \pm 4$. Solutions (4,3), (-4,3).

02 Solve $y = x^2$ and $y = 2x + 3$.

$x^2 - 2x - 3 = 0$, so $x = 3$ or -1 . Points (3,9) and (-1,1).

03 Solve $xy = 6$ and $x + y = 5$.

$x(5 - x) = 6$ gives $(x - 2)(x - 3) = 0$. Points (2,3) and (3,2).

04 Explain why solving only $x^2 = 16$ as $x = 4$ can lose a solution.

Both 4 and -4 square to 16. Both must be checked in the original system.

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05 The data are (0,2), (1,5), (2,8). Find an exact linear model and predict y at $x = 5$.

Slope 3 and intercept 2 give $y = 3x + 2$; $y(5) = 17$.

06 The data are (0,3), (1,6), (2,12). Find an exact exponential model.

The values double with each unit of x : $y = 3(2)^x$.

07 A fitted model predicts 12.5 when the observed value is 14. Find the residual.

Residual = observed - predicted = $14 - 12.5 = 1.5$.

08 Use a graphing tool to find the intersections of $y = x^2$ and $y = x + 2$; then verify algebraically.

$x^2 - x - 2 = (x - 2)(x + 1) = 0$. Intersections (-1,1), (2,4).