Pick Up the Warm Up

Any questions on HW ??

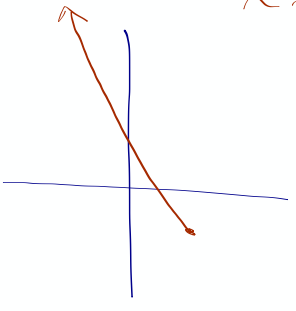
---

① Use the method of x-intercepts to solve the equation

$$x^2 - 8x + 10 = -2\sqrt{3-x}$$

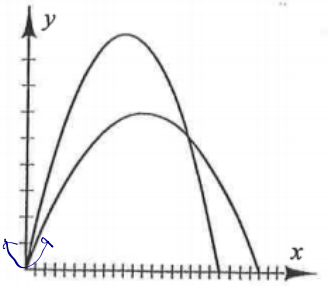
$$x^2 - 8x + 10 + 2\sqrt{3-x} = 0$$

$x \approx$ ~~$x \approx$~~ $x = 2$



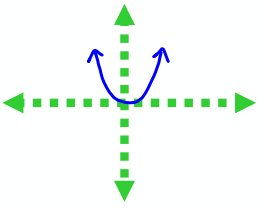
Consider the parabolic paths of two soccer penalty kicks, represented in the graph at right. One kick covers a horizontal distance of 20 yards and reaches a maximum height of 9 yards. The other kick covers a horizontal distance of 24 yards, but only reaches a maximum height of 6 yards.

Find an equation that describes the path of each kick.



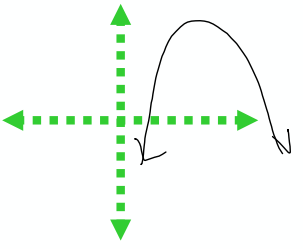
parabola

$y = x^2$



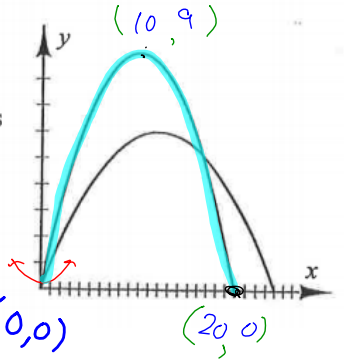
transformed

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



Consider the parabolic paths of two soccer penalty kicks, represented in the graph at right. One kick covers a horizontal distance of 20 yards and reaches a maximum height of 9 yards. The other kick covers a horizontal distance of 24 yards, but only reaches a maximum height of 6 yards.

Find an equation that describes the path of each kick.



$y = x^2$

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

$y = a(x-10)^2 + 9$

$y = a(x-10)^2 + 9$

$0 = a(20-10)^2 + 9$

$0 = 100a + 9$

-9

$a = -\frac{9}{100}$

$= -.09$

Substitute in a point on the curve (not the vertex)

$y = a(x-10)^2 + 9$

$0 = a(20-10)^2 + 9$

$0 = 100a + 9$

$-9 = 100a$

$a = -\frac{9}{100}$

$= -.09$

$(20, 0)$

$y = -\frac{9}{100}(x-10)^2 + 9$

$y = a(x-10)^2 + 9$

$0 = a(20-10)^2 + 9$

$0 = 100a + 9$

$-9 = 100a$

$a = -\frac{9}{100}$

$= -.09$

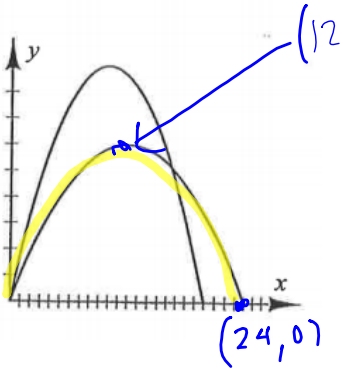
Substitute in a point on the curve (not the vertex)

$(20, 0)$

$y = -.09(x-10)^2 + 9$

Consider the parabolic paths of two soccer penalty kicks, represented in the graph at right. One kick covers a horizontal distance of 20 yards and reaches a maximum height of 9 yards. The other kick covers a horizontal distance of 24 yards, but only reaches a maximum height of 6 yards.

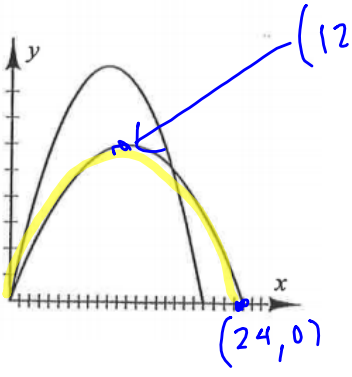
Find an equation that describes the path of each kick.



$$y = \frac{-1}{24}(x-12)^2 + 6$$

Consider the parabolic paths of two soccer penalty kicks, represented in the graph at right. One kick covers a horizontal distance of 20 yards and reaches a maximum height of 9 yards. The other kick covers a horizontal distance of 24 yards, but only reaches a maximum height of 6 yards.

Find an equation that describes the path of each kick.



$$y = \frac{-1}{24}(x-12)^2 + 6$$

Monday	Tuesday	Wednesday	Thursday	Friday
Feb 24 **4.1.2** **Day B** **Solving Equations and Systems Graphically**	25 **4.1.3** **Finding Multiple Solutions to Systems**	26 **4.1.4** **Use Systems of Equations to Solve Problems**	27 Unity Assembly **4.2** **Day 1** **Solving Inequalities**	28 **4.2** **Day 2** **Solving Inequalities**
MAR 2 **Ch. 4 Review**	3 Statistics – Day 1	4 **Ch. 4 Test**	5 **Statistics – Day 2** Last day to turn-in late HW packets	6 Review Day #1 for Final Exam
9 Review Day #2 for Final Exam Turn-in textbook at end of period.	10 **Final Exam Part 1** Per 1 – 30 min classes Per 2 – **90 Min classes** Per 3 – 30 min classes Per 4 – **90 Min classes** Per 5 – 30 min classes	11 **Final Exam Part 2** Per 1 – **90 Min classes** Per 2 – 30 min classes Per 3 – **90 Min classes** Per 4 – 30 min classes Per 5 – **90 Min classes**	12 **No School** Grading Day	13 **No School** Inservice Day for Teachers **Trimester #3 Starts Monday, March 16th**

HW Questions

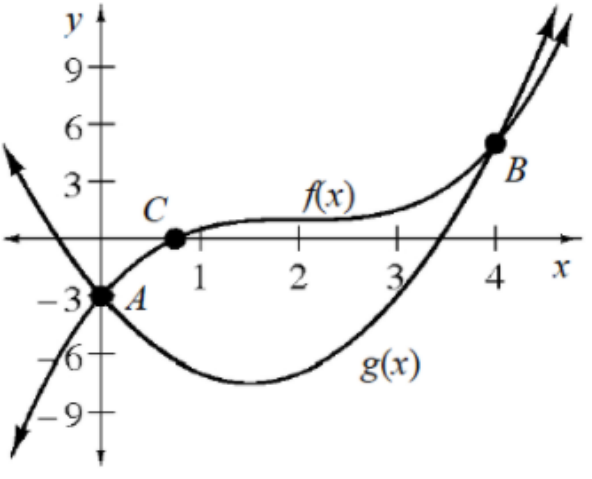
4-30. Consider the graphs of $f(x) = \frac{1}{2}(x-2)^3 + 1$ and $g(x) = 2x^2 - 6x - 3$ at right. Homework Help ✎

a. Write an equation that you could solve using points A and B. What are the solutions to your equation? Substitute them into your equation to show that they work.

b. Are there any solutions to the equation in part (a) that do not appear on the graph? Explain.

c. Write an equation that you could solve using point C. What does the solution to your equation appear to be? Again, substitute your solution into the equation. How close was your estimate?

d. What are the domains and ranges of $f(x)$ and $g(x)$?



32d

✓ HW

7) $(x-2)^2 - 3 = 1$

10b

10c

AIMS

- Validate solutions because sometimes "good" solutions are "naughty"
- Approximate solutions when an algebraic solution is not possible.

HW
Lottery

All
Calculators
upside down / off

Use algebraic strategies to solve

$\left(\sqrt{2x+3}\right)^2 = (x)^2$

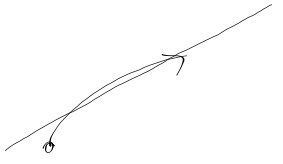
square both sides

$2x+3 = x^2$

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

$x = 3 \quad x = -1$

$\sqrt{2x+3} = x$



$x = 3$

$x = -1$

We should have got two apparent solutions

$x = -1$

$x = 3$

now do an algebraic check in the original equation

$$\sqrt{2x+3} = x$$

check $x = -1$

$\sqrt{2(-1)+3} = (-1)$

$\sqrt{-2+3}$

$\sqrt{1}$

$1 \neq -1$

check $x = 3$

$\sqrt{2(3)+3} = (3)$

$\sqrt{6+3}$

$\sqrt{9}$

$3 = 3$

$x = 3$

and $x = -1$ is extraneous

$\sqrt{2x+3} = x$

check $x=-1$

$\sqrt{2(-1)+3} = (-1)$

$\sqrt{1} = (-1)$

$1 \neq -1$

$\therefore$ $x=-1$ is extraneous

check $x=3$

$\sqrt{2(3)+3} = (3)$

$\sqrt{9} = 3$

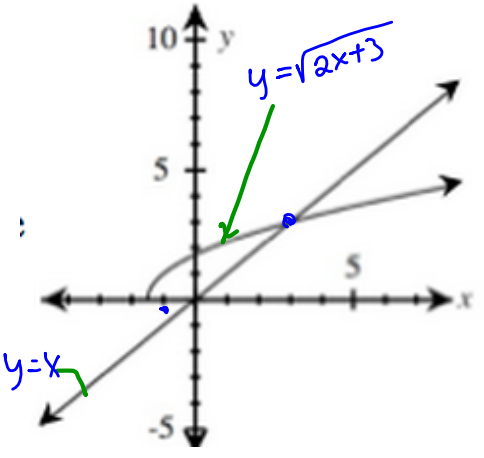
$3 = 3$ ✓

$x=3$ is a solution

Validate Graphically

$\sqrt{2x+3} = x$

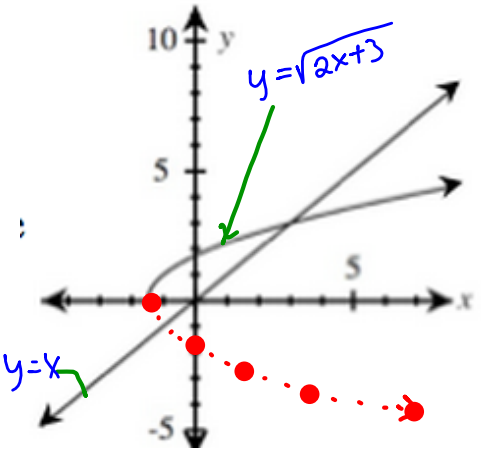
$y_1 \qquad y_2$



Why did the extraneous solutions appear?

If the sideways parabola is completed, it would intersect at $x = -1$

The graph of $y = \sqrt{2x+3}$ did not intersect because $\sqrt{2x+3}$ has no negative values



Equations with radicals

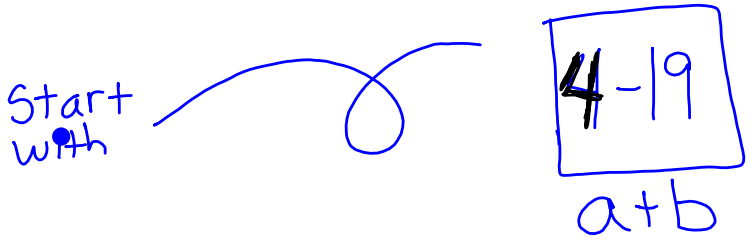
called radical equations, commonly have solutions that have extraneous solutions

Every group needs a

Leader

Runner

Player (1 or 2)



Runners

Be prepared to show proof on part a

Leaders

Get a consensus answer on part b and be prepared to share it with the class.

$$20x + 1 = 3^x$$

(a) what were the solutions ?

How did you prove they were solutions?

$x = 0$

$20(0) + 1 = 3^0$

$x = 4$

$20(4) + 1 = 3^4$

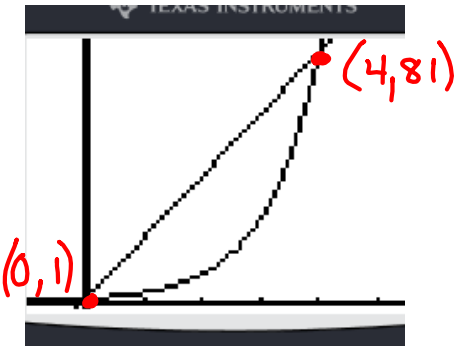
$80 + 1$

$81 = 81$ ✓

(b) Are the solutions a single number?

or

or be the coordinates of a point?



$20x + 1 = 3^x$

(b) The original equation $20x + 1 = 3^x$ only has one variable so the solutions are the x-coordinates of the points of intersection.

$x = 0 \quad x = 4$

move on to C

$20x + 1 = 3^x$

(c)

$20x = 3^x - 1$

$3^x = 10 + x$

$x = 0 \quad x = 4$

B.B.

See your Test

4 .... 22 -25, 27-28

26 a an optional problem, not for extra credit.... just for the challenge (fun) of it.

•