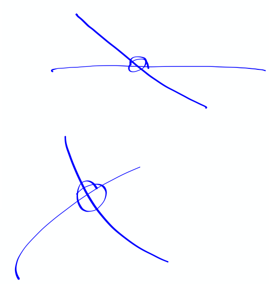
Pick Up the Warm Up

[I will pass back the LCQ from last Wed.]

Later in the period you will see your Ch. 3 Test

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

$$\underbrace{x^2 - 8x + 10}_{Y_1} = \underbrace{-2\sqrt{3-x}}_{Y_2}$$



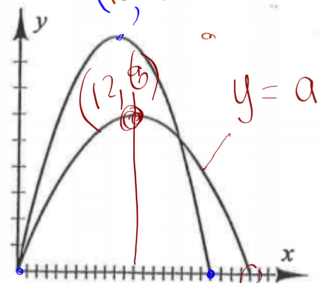
$$\underbrace{x^2 - 8x + 10 + 2\sqrt{3-x}}_{Y_1} = 0$$

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

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.

$(10,9)$ $(12,6)$ $y = a(x-12)^2 + 6$



$(0,0)$ 12 $(20,0)$ $(24,0)$

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

$0 = 100a + 9$

$-9 = 100a$

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

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

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

$0 = a(24-12)^2 + 6$

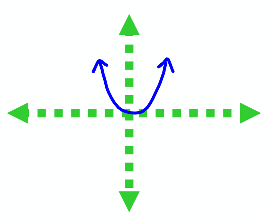
$0 = a(144) + 6$

$-6 = 144a$

$a = -\frac{6}{144} = -\frac{1}{24}$

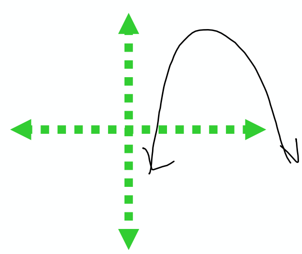
parabola

$y = (x)^2$



transformed

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



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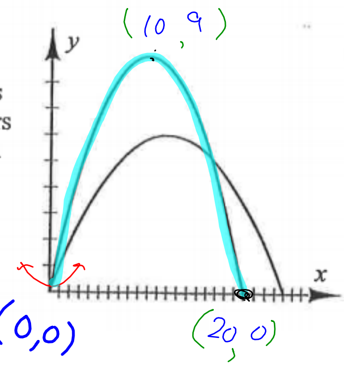

$y = x^2$

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

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

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

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

$0 = 100a + 9$

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

$= -.09$

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

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

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

$0 = 100a + 9$

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

$= -.09$

$(20, 0)$

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

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

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

$0 = 100a + 9$

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

$= -.09$

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.

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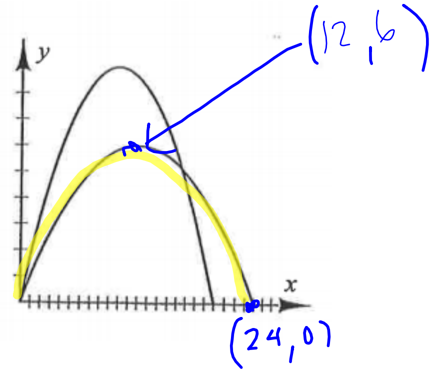

$$y = \frac{-1}{24}(x-12)^2 + 6$$

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.

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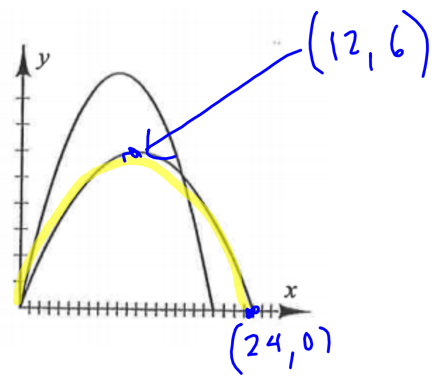


$$y = \frac{-1}{24}(x-12)^2 + 6$$

Hw Questions

I will be passing out the LCQ solutions

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 ✎

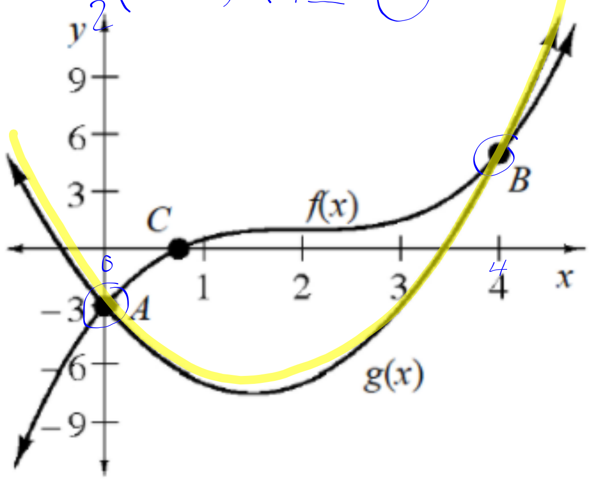
a. Write an equation that you could solve using points A and B. What are the solutions to your equation? Substitute them into your equation to show that they work. $X=0$ $X=4$

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

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 $g(x)$?

$\frac{1}{2}(x-2)^3+1=0$



32d

$$(x-4)^2 + (y-1)^2 = 10$$

$$(y-1)^2 = 10 - (x-4)^2$$

$$y-1 = \pm\sqrt{10-(x-4)^2}$$

$$y = 1 \pm \sqrt{10-(x-4)^2}$$

✓ HW

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

10b

10c

Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
12 No School	13 4.1.2 Day B Solving Equations and Systems Graphically	14 4.1.3 Finding Multiple Solutions to Systems	15 4.1.4 Use Systems of Equations to Solve Problems	16 4.2 Day 1 Solving Inequalities
19 4.2 Day 2 Solving Inequalities	20 Ch. 4 Closure	21 Ch. 4 Test	22 No School Thanksgiving	23 No School
26 Review for Trimester Exam - Day 1	27 Review for Trimester Exam -Day 2	28 Final Exam Part 1	29 Final Exam Part 2	30 Last Day of Trimester Go over Final Exam See Final Grades Lots of Brain Breaks

AIMS

- ✓ Validate solutions
  because sometimes "good" solutions are "naughty"

- ✓ Approximate solutions when an algebraic solution is not possible.

All
Calculators
upside down / off

Use algebraic strategies to solve

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

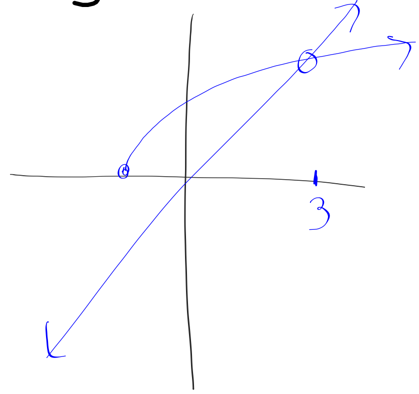
square

$$2x+3 = x^2$$

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

$$\downarrow$$

$$x=3 \quad x=-1$$



$$x = 3$$

$$x = -1$$

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 $x=-1$

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

$\sqrt{1}$

$1 = -1$

false

check $x=3$

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

$\sqrt{9}$

$3 = 3$ ✓

good

ex

$x=3$

$x=-1$ (extraneous)

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

$\sqrt{1}$

check $x=-1$

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

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

$1 \neq -1$

$x=-1$ is extraneous

check $x=3$

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

$\sqrt{9} = 3$

$3 = 3$

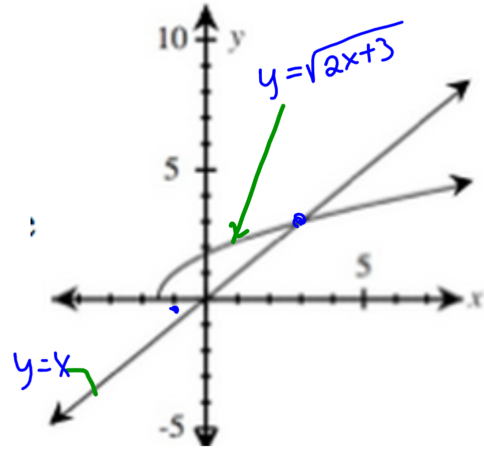
✓

$x=3$ is a solution

Validate

Graphically

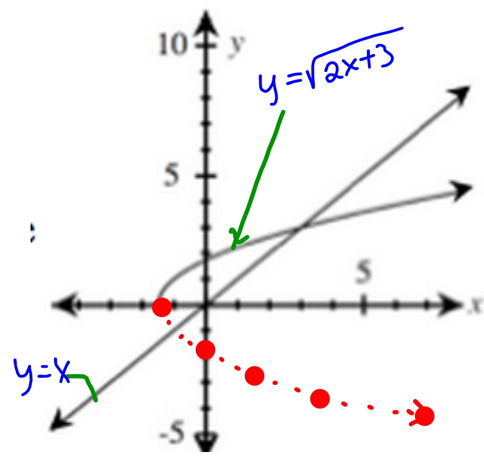
$$\underbrace{\sqrt{2x+3}}_{Y_1} = \underbrace{x}_{Y_2}$$



Why did the extraneous solutions appear?

If the sideways parabola is completed, it would itersect 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

4-19
9+b

Every group needs a •

Leader
Runner
Player (1 or 2)

Start with $\boxed{4-19}$

a+b

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?

$x = 0$ ✓

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

$1 \quad 1$

$x = 4$

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

$80 + 1$

$81 = 81$ ✓

$X = 1.696E{-16} \quad Y = 0$

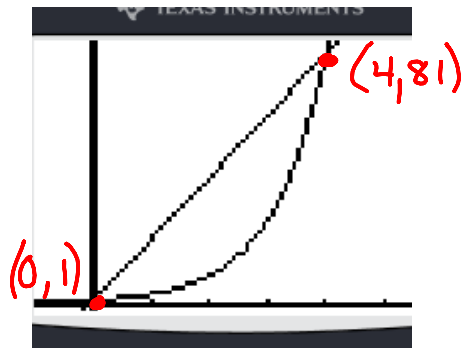
1.696×10^{-16}

0

(b) Are the solutions a single number?

or

or be the coordinates of a point?



$20x + 1 = 3^x$

$x = 4$

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

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

$$-1 \qquad -1$$

$$20x = 3^x - 1$$

(c)

$$20x = 3^x - 1$$

$x=0$

$x=4$

$x = 0 \quad x = 4$

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.

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