Practice

Nov 28

Quadratic's Project

Your Name:_____

Step 1: Take your own real-life picture that contains a parabola or a partial parabola. Orient the camera so that the parabola clearly opens up or down. The satellite picture to the right would not work for this assignment unless you rotated the picture first. Be creative in finding unusual parabolas--You can always edit your photo afterward to make it work on the grid.

Step 2: Download the picture and ideally superimpose an x-y grid over top of the picture. You **cannot** place the vertex directly on the origin (0,0)—*hint: place one of the x-intercepts on the origin (0,0).* If you cannot get a program to do this, print the picture and draw the x-y axis on the picture and lightly sketch a few grid lines on it. You can use indesign, photoshop, paint, or neatly draw the grid on top of the printed picture.

Step 3:

a) Label all of the following on the graph: x-intercept(s), y-intercept, and vertex
b) Use desmos graph, to determine the *approximate* equation of your parabola to one decimal place. You can use either intercept or vertex form to start, but will need to show it changed to standard from on the same page (or on the back if you don't have room).
c) State the horizontal/vertical shift, max/min, flips, axis of symmetry, and any stretches/shrinks.
Your picture, labels and equation (show work) should all be neatly formatted on one page.

Complete the following practice problems before attempting to calculate the equation for your own parabola.

(0,40)

Practice #1: x-intercepts are at x = -37 and x = 37 and a= -1 Y-intercept is (0,40) and the vertex is _____.

Find the equation. Hint—use intercept form, then change to standard form.

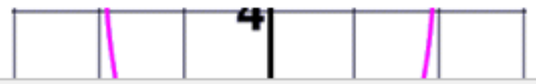
$y = -(x-37)(x+37)$

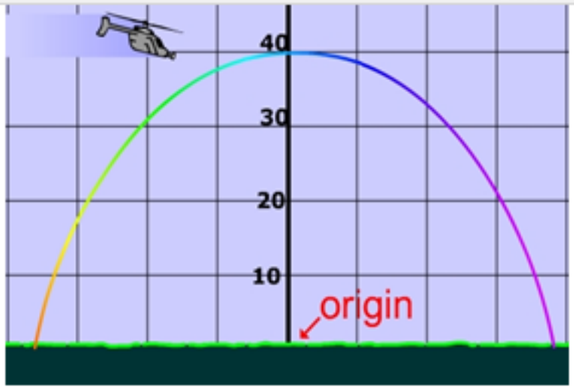
$y = (-x+37)(x+37)$

$y = -x^2 - 37x + 37x + 1369$

$y = -x^2 + 1369$

Practice #2: **Determine the approximate equation of the parabola. Use vertex form, then change to standard form.**





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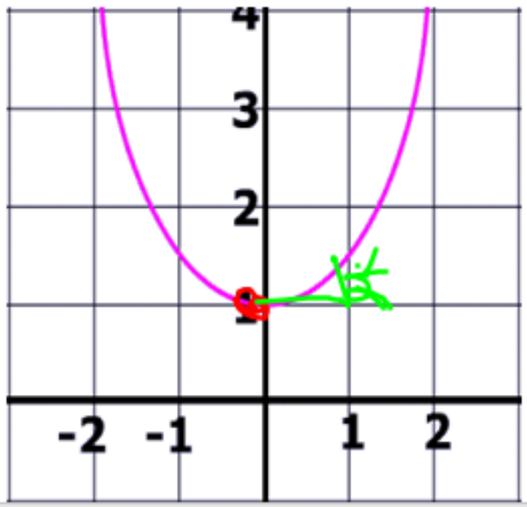

vertex (0,1) (h,k)

$a = \frac{1}{2}$

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

$y = \frac{1}{2}(x)^2 + 1$

$y = \frac{1}{2}x^2 + 1$

Practice #3: a) Sketch a grid on top of this picture. Hint—placing the vertex on the origin is always easiest. Label any of the following on the graph: x-intercept(s), y-intercept, AOS, Vertex.

b) Using desmos graph, hold up the parabola onto the screen and put the vertex on the origin. Using guess and check, put in a variety of numbers for "a" in vertex form to find out how much the parabola shrinks or stretches (hint: y=a(x-0)2 +0… looks like y=ax2). Then, write the vertex form of the equation in the space below, and convert it to standard form.

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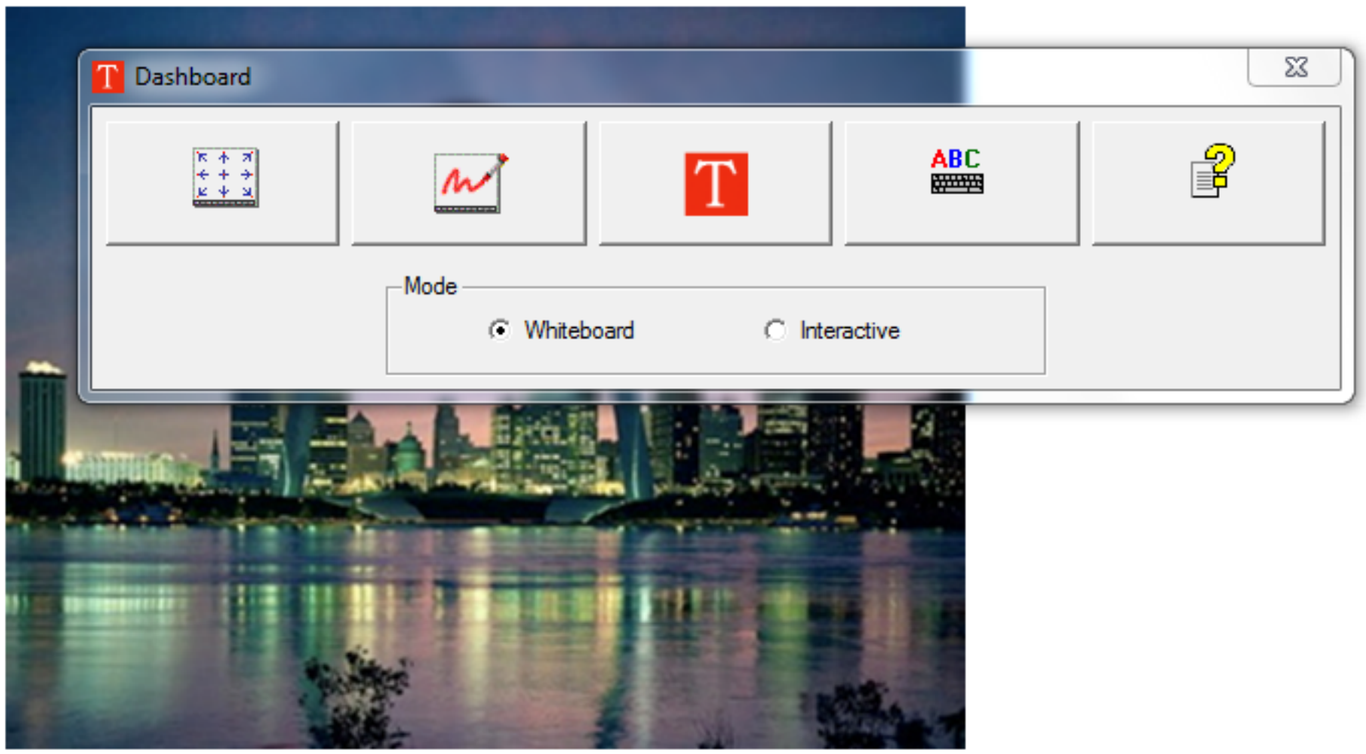

Practice #4: a) Sketch a grid on top of this picture. **The vertex cannot be on the origin this time**. Label any of the following on the graph: x-intercept(s), y-intercept, AOS, Vertex.
b) Using "guess and check" technology on desmos graph, determine the *approximate* equation of your parabola. You can use any form of an equation: standard, intercept or vertex form.

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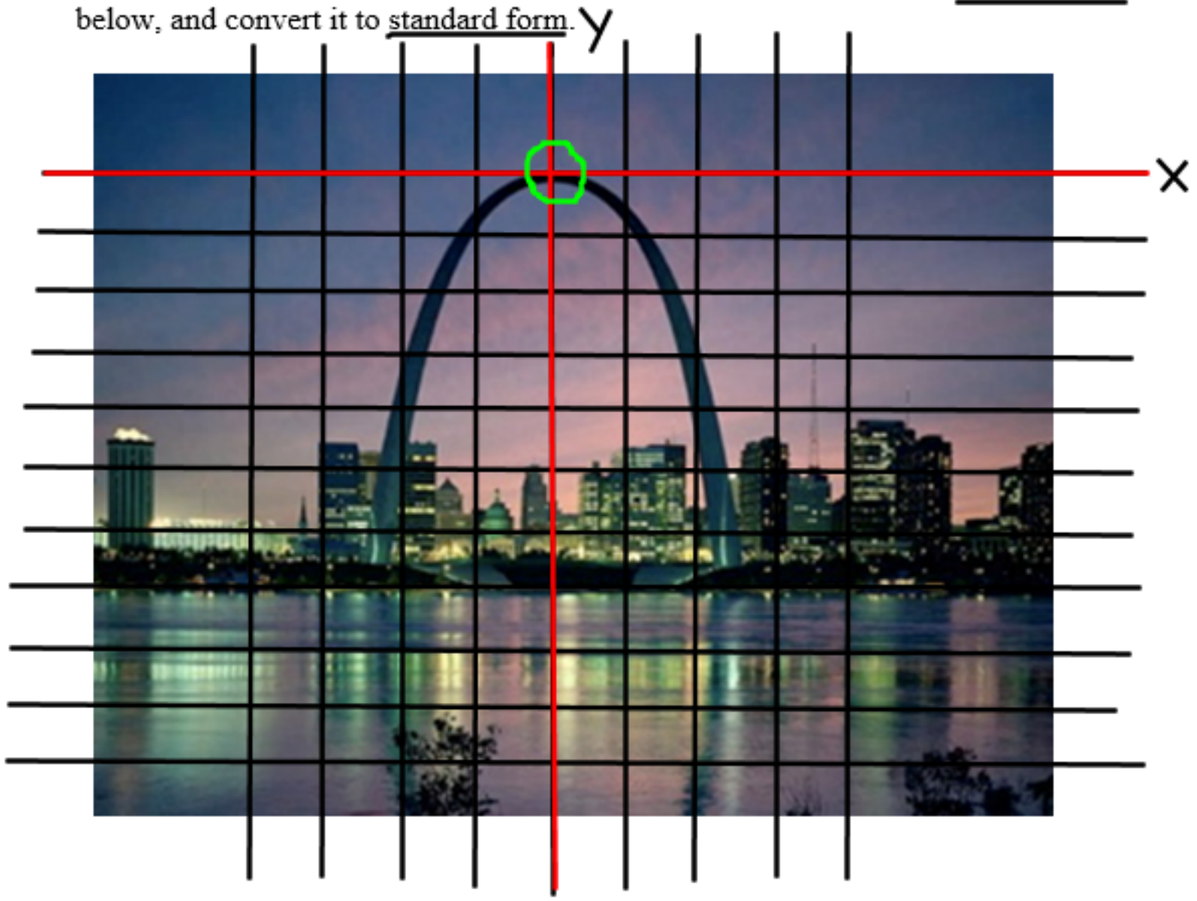

vertex = (0, 0)
x int = 0
y int = 0
A.o.S x = 0
a ≈ -0.7
$y = -0.7(x)^2 + 0$
$y = -0.7x^2$

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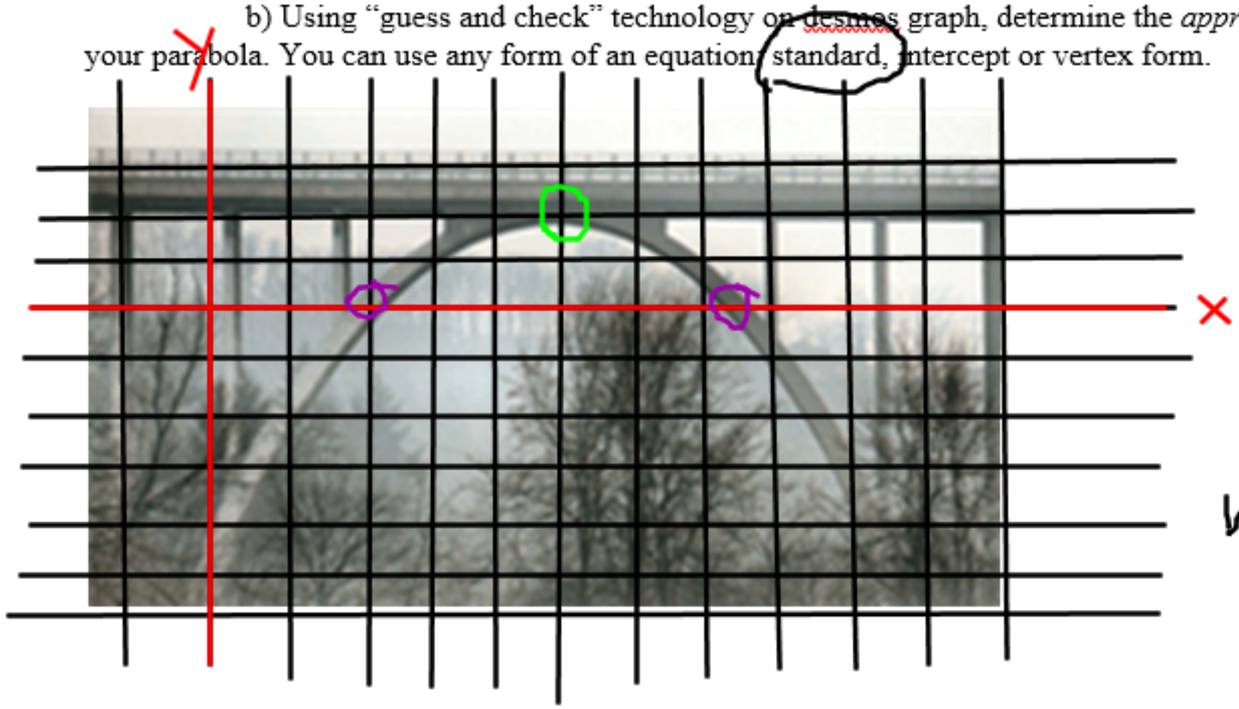


vertex = (5, 2)

X int: 2, 7.5

a = −0.27

vertex form:

$y = -0.27(x-5)^2+2$

(4) TDChristian Webmail :: | Desmos Graphing Calcula | Edsby: Home

https://www.desmos.com/calculator

Apps For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

Untitled Graph

desmos

Create Account or Sign In

1 bridge.jpg

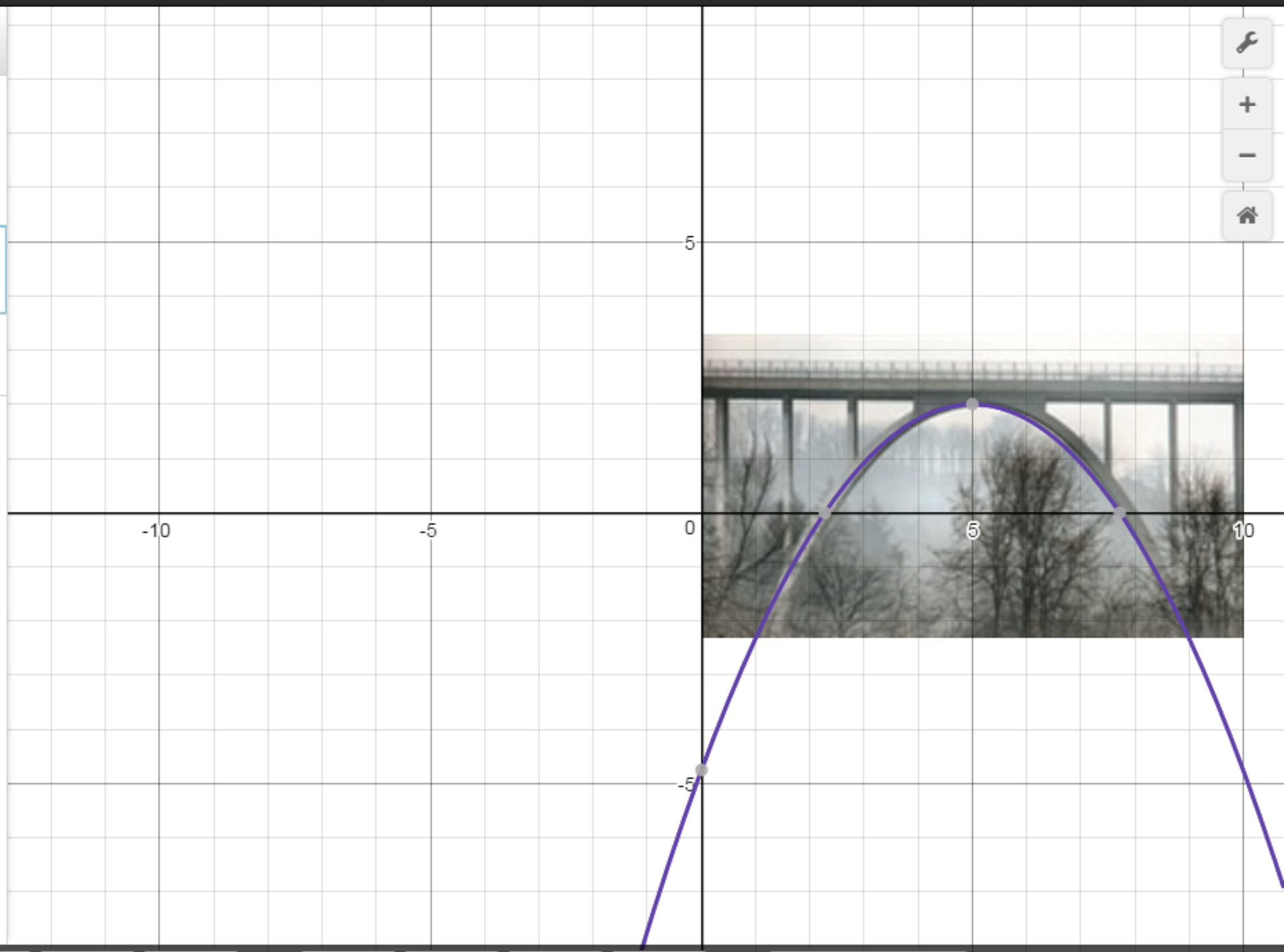
center: (5 , 0.5)

size: 10 × 5.6

2 $y = -.27(x-5)^2 + 2$

3

4



x y a^2 a^b ( ) < > $|a|$, ≤ ≥ A B C √ π

7 8 9 ÷ 4 5 6 × 1 2 3 − 0 . = +

functions ← →

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