Monday, May 6, 2019

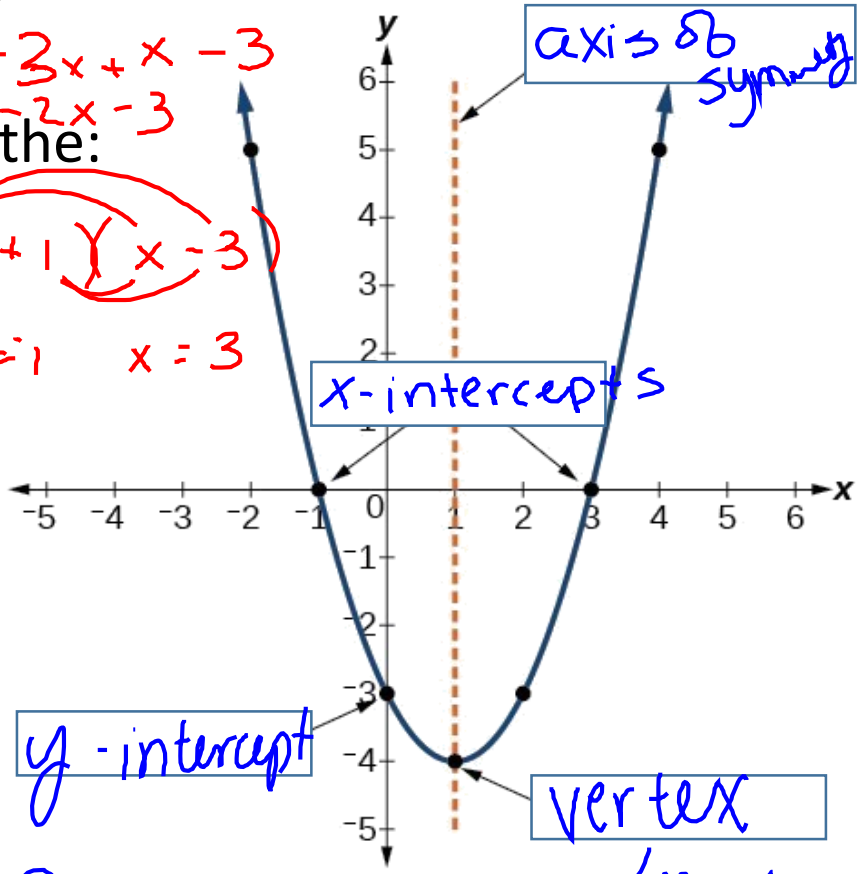
- Warm-up
  - Sketch the parabola and identify the:
    - axis of symmetry $x = 1$
    - vertex $(1, -4)$
    - y-intercept(s) $(0, -3)$
    - x-intercept(s) $(-1, 0)$ $(3, 0)$
    - solution(s) → x-intercepts
      zeroes roots

$x^2 - 3x + x - 3$

$x^2 - 2x - 3$

$(x + 1)(x - 3)$

$x = -1$ $x = 3$



$x = y^2$ . .

- Review Quadratics
- Introduce Performance Task

Objectives

Content: I will review the concept of **parabolas** and see a new way to apply it.

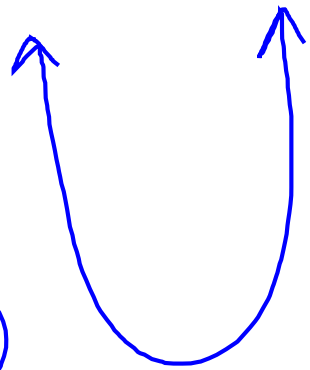
Social: I will participate in the class activities.

Language: I will **read** directions carefully and **identify** new words in the task directions.

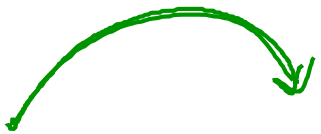
Review Quadratics – What are they?

$y = ax^2 + bx + c$

y-intercept (0, ?)



projectile motion



business models (profit)

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Review Quadratics – How?

$f(x) = x^2 - 2x - 8 = 0$

Factoring

$x - 8$: $+4, -2$; $-4, +2$; $+2, -8$; $+8, -1$; $-8, +1$

$(x-4)(x+2) = 0$

$x - 4 = 0$ $\quad$ $x + 2 = 0$

$+4 \; +4$ $\quad$ $-2 \; -2$

$x = 4$ $\quad$ $x = -2$

$(4, 0)$ $\quad$ $(-2, 0)$

Quadratic Formula

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a = 1$

$b = -2$

$c = -8$

$x = \dfrac{-(-2) \pm \sqrt{(-2)^2 - 4 \cdot 1 \cdot -8}}{2 \cdot 1}$

$= \dfrac{2 \pm \sqrt{4 + 32}}{2}$

$= \dfrac{2 \pm \sqrt{36}}{2}$

$\dfrac{2+6}{2} = \dfrac{8}{2} = 4$

$\dfrac{2-6}{2} = \dfrac{-4}{2} = -2$

Graphing

$y =$ put in equation

GRAPH $\quad$ TRACE

table $\quad$ look for $y = 0$

GRAPH

CALC

trace

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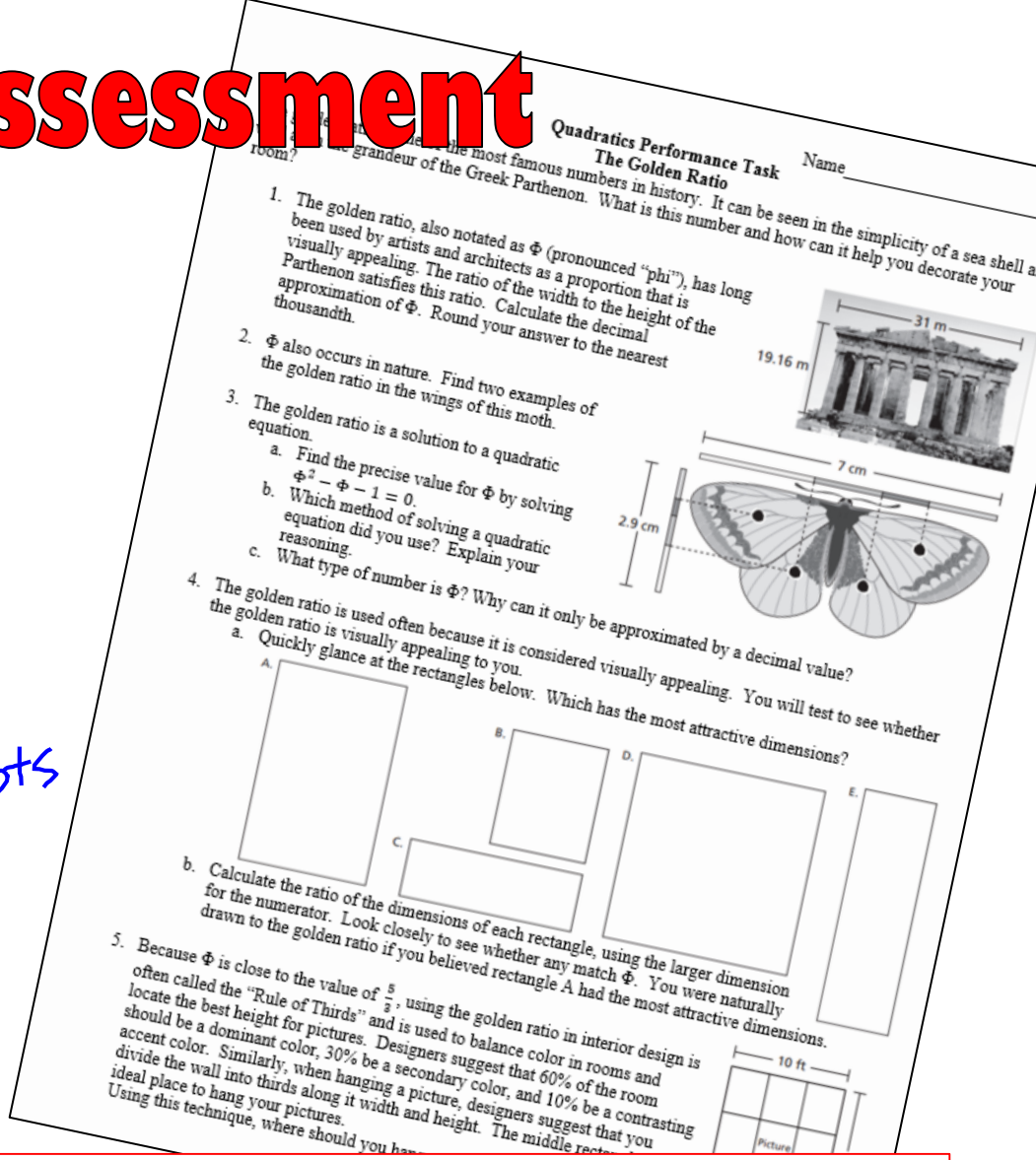
Performance Assessment

Due Friday @ the beginning

Written up

Work time Tue, Wed

Summative min 20pts



Quadratics Performance Task Name _____

The Golden Ratio

room? grandeur of the Greek Parthenon. What is this number and how can it help you decorate your

1. The golden ratio, also notated as Φ (pronounced "phi"), has long been used by artists and architects as a proportion that is visually appealing. The ratio of the width to the height of the Parthenon satisfies this ratio. Calculate the decimal approximation of Φ. Round your answer to the nearest thousandth.

2. Φ also occurs in nature. Find two examples of the golden ratio in the wings of this moth.

3. The golden ratio is a solution to a quadratic equation.
   a. Find the precise value for Φ by solving $\Phi^2 - \Phi - 1 = 0$.
   b. Which method of solving a quadratic equation did you use? Explain your reasoning.
   c. What type of number is Φ? Why can it only be approximated by a decimal value?

4. The golden ratio is used often because it is considered visually appealing. You will test to see whether the golden ratio is visually appealing to you.
   a. Quickly glance at the rectangles below. Which has the most attractive dimensions?
   b. Calculate the ratio of the dimensions of each rectangle, using the larger dimension for the numerator. Look closely to see whether any match Φ. You were naturally drawn to the golden ratio if you believed rectangle A had the most attractive dimensions.

5. Because Φ is close to the value of $\frac{5}{8}$, using the golden ratio in interior design is often called the "Rule of Thirds" and is used to balance color in rooms and locate the best height for pictures. Designers suggest that 60% of the room should be a dominant color, 30% be a secondary color, and 10% be a contrasting accent color. Similarly, when hanging a picture, designers suggest that you divide the wall into thirds along it width and height. The middle rect... ideal place to hang your pictures.
   Using this technique, where should you ha...

https://youtu.be/55GUuB8qPI8

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