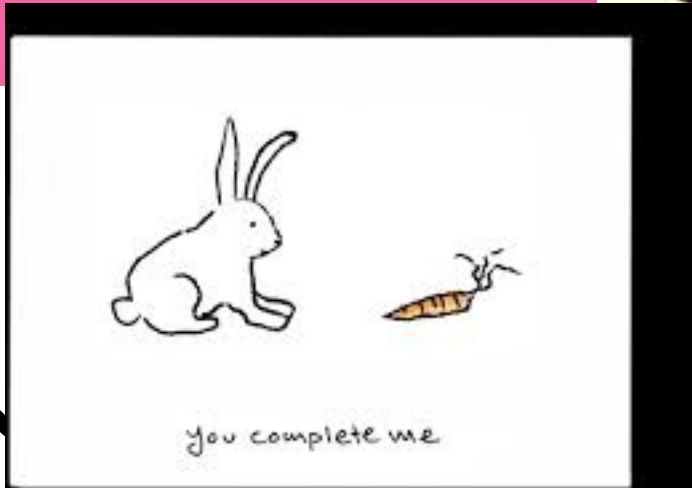
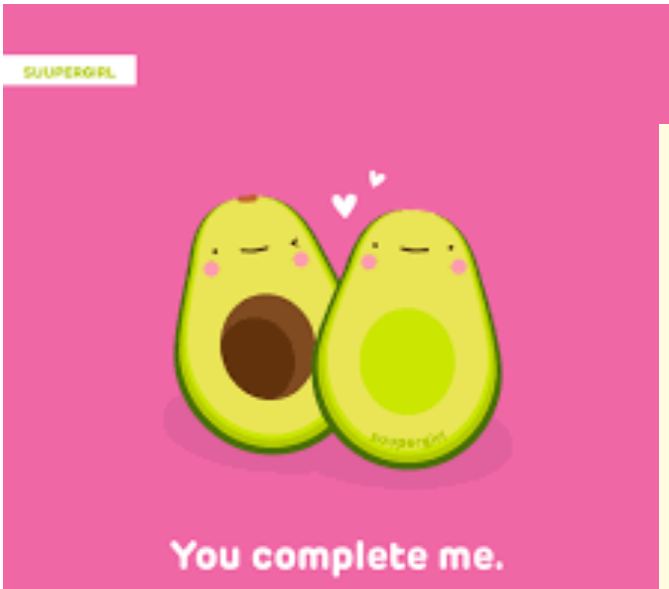


Lesson 3.2.3: Completing the Square



By the end of this lesson, I will be able to answer the following questions...

1. How do I “Complete the Square?”
2. What is completing the square used for?
3. How does it relate to a parabola?

Vocabulary

1. Perfect Square Trinomial (review)
2. Completing the Square - A process that makes a perfect square trinomial.
3. Vertex Form $y = a(x - h)^2 + k$

Prerequisite Skills with Practice

Factoring Perfect Square Trinomials

$$x^2 - 18x + 81$$

$$4x^2 + 12x + 9$$

$$4x^2 - 16x + 16$$

Completing the Square can be used to convert a quadratic equation from Standard form to Vertex form.

Use completing the square to put the following in VERTEX FORM.

("A" is one)

Use Desmos to confirm the vertex you found is correct.

$$x^2 + 10x - 7 = y$$

$$x^2 + 5x + 2 = y$$

Use completing the square to put the following in VERTEX FORM

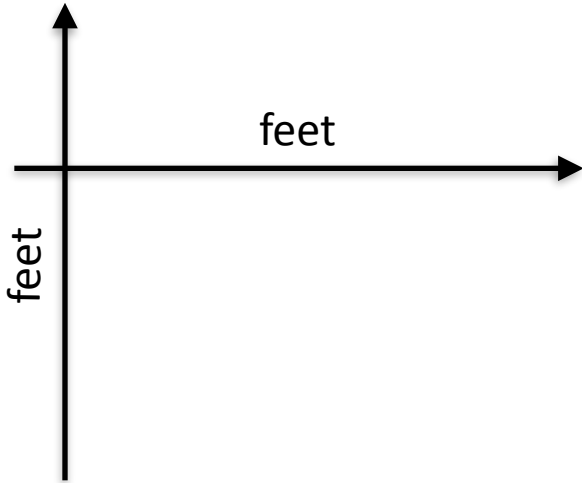
("A" is NOT one)

Use Desmos to confirm the vertex you found is correct.

$$2x^2 + 8x - 7 = y$$

$$3x^2 + 2x - 7 = y$$

Using both forms (standard and vertex) in an application



Casey is a diver. One of her dives is modeled by

$$h(d) = d^2 - 10d + 5$$

the relation where $h(d)$ is her height above the water in feet, and “ d ” is the horizontal distance in feet from the platform.

Use the given ***standard form*** to determine Casey’s starting height.

Convert the function to ***vertex form*** and determine how deep Casey dove underwater.

THE END



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