Insights project: Challenge Question

# (Mini challenge)
# Exponents + Function composition

**Two question:**

1. Find all the values of x for which:

$$(x-3)^{(3x^2-12x+9)} = 1$$

2. Given the two function $f(x)$ and $g(x)$ as below, where C is (an unknown) real number:

$f(x) = 2x + C$ and $g(x) = 3x + 4$

Find the value of C if it is given that

$$f\big(g(x)\big) = g\big(f(x)\big)$$

Some specific guides and rules:

1. Show your work.
2. You need to rely only on material we learned in class.

General rules for challenge questions:

1. You are allowed to work with a group and collaborate with up to 3 people.
2. If you work as a group (or collaborate), keep in mind:
    a. Each member should submit her/his own work.
    b. Each member needs to write the names of all group members on the work.
3. You are allowed to have external (adult, tutor, etc.) help, but please don't solicit for the full solution. The goal is for you yourself to try and solve it, and understand the subtleties of the problem. Again, please note that as well on the sheet. NO points will be taken off: I just want to have a real appreciation of how the class is doing on these.
4. Have fun solving it!!

=== End ====