

Strategies for not freaking out when faced with scary stuff

Sometimes in math, we deal with formulas, equations, and ideas that seem complicated. For example, we might be asked to show that $f(x) = \frac{x+1}{3x}$ and $g(x) = \frac{1}{3x-1}$ are inverses, using the round-trip theorem. This involves simplifying the expression

$$\frac{\frac{1}{3x-1} + 1}{3\left(\frac{1}{3x-1}\right)}.$$

Of course, at first glance, this expression seems very complicated. It is natural to be apprehensive. However, you cannot always avoid expressions, formulas, definitions, theorems, concepts, and so on, that are complicated. Thus, rather than freaking out, we need to figure out how to get beyond our apprehension and understand the problem.

Here are some strategies:

1. **Remain calm!** There's no point in becoming stressed at a problem like this. Take a deep breath if necessary. Remember, you are capable of figuring out this problem!
2. **Break the problem into parts.** Is there a way you can simplify the problem? If you can break the problem into parts, it helps, because then you can:
3. **Concentrate on each part separately.** For example, in the fraction above, simplifying the expression might start with making a fraction out of the numerator. While doing this, it helps not to worry about the denominator. Working at one part at a time means worrying about less stuff, and decreasing the risk of making an error.
4. **Don't be afraid to take it one step at a time.** Sometimes, trying to do several steps at once can cause errors. Granted, it's faster, but that won't help you at all if you make an error.
5. **Know when to keep going, and know when to move on.** There are two opposite tendencies that you should avoid:
 - (a) One is the tendency to see a hard problem and immediately skip it. Often times, a problem that seems hard at first glance turns out to be quite easy once you get started. You should at least give the problem a shot, keeping in mind the strategies above.
 - (b) On the other hand, sometimes people keep pounding their head against a difficult problem to no avail. In this case, it is sometimes best to move on to other problems, and come back to this problem later. Perhaps completing the other problems will allow you insight into the difficult problem. Also, it is not a bad idea sometimes to do something else entirely for a while—take a walk, do the dishes, work on another subject—and then return to the problem. Doing other things can let the problem digest in your head for a while, and the critical piece need to solve the problem may come naturally. Note, however, that you cannot use this strategy unless you **don't procrastinate on your homework**.

Mathematics often involves a lot of problem-solving. The strategies above are not just for solving mathematical problems, but problems in general.