We normally publish the post-mortem for a midterm after it has been marked and released. Here is a list of common errors provided by the graders for midterm 1.

**Question 1**
- In part (a), many students used parameter names that were different from the ones given in the equation. While the function produces the same result as expected, for a faithful translation, the parameter names must be the same as the ones appearing in the equation.
- In part (b), some students used the given parameter name `decay-coeff` in the function header, but `lambda` in the body.
- In part (b), some students misinterpreted the meaning of $\log_2$ and confused it with $\ln$ (i.e. $\log_e$).

**Question 2**
- In part (a), many students did not reference their parameter names in their purpose. This is a mistake that has often been repeated in assignments and has cost students a lot of marks. Referencing your parameter names in your purpose helps the reader understand their significance.
- In part (a), many students used `Int` or `Num` instead of `Nat` in their contract. Be as specific as possible when writing contracts.
- In part (b), many students did not define appropriate constants and important ones were often overlooked.
- In part (c), many students used “magic numbers” in their function - constants they had defined in part (b) could have been used here.
- In part (c), some students used incorrect comparison signs in their solution, such as $>$ instead of $\geq$.
- In part (d), many students missed testing the edge cases of the conditional statements.
- In part (d), some students did not leave a comment indicating what they are testing in each `check-expect` statement.

**Question 3**
- Many students substituted the constant $b$ as an expression rather than its value. Since the question stated that the definition of $b$ had been simplified, its value should have been substituted instead.
- In part (b), many students made arithmetic errors in the final step.
• In part (c), many students got confused between the constant \( b \) and the parameter \( b \), resulting in an incorrect answer.

**Question 4**

• Students often forgot to put strings in quotation marks. We didn’t deduct marks this time, but likely will in the future.

• In part (d), some students wrote arguments that produced "DrRacket ", i.e. the answer of the `else` case.

• Overall, this question was very well done.

**Question 5**

**Question 5a**

• In part (a), many students had “magic numbers” in their code for numbers that would have been appropriate to make as constants, such as the coordinates of the top-right and bottom-left points.

• In part (a), many students used `cond` statements even though boolean logic would have sufficed here. Moreover, some students used many nested `cond` statements, resulting in unnecessary complex code without some necessary `else` cases.

• In part (a), many people used nested `and` statements, e.g. using `(and a (and b c))` instead of `(and a b c)`. **No marks were deducted for this**, but students are encouraged to make use of the advantage that multi-argument functions provide.

• In part (a), some students used `>`, `>=`, `<=`, `<` instead of just `>=`, `<=`, `<`. No marks were deducted for this, but students are encouraged to make use of the advantage that multi-argument functions provide.

• In part (a), some students used `>`, `>=`, `<=`, `<` instead of just `>=`, `<=`, `< and >`.

**Question 5b**

• In part (b), many students missed the closing parentheses at the end of the function definition.

• In part (b), many students made mistakes when calculating the slope of the diagonal.

• In part (b), many students used `equal?` instead of more specific equality predicates like `=`.

• In part (b), some students used `boolean=?` instead of just using the boolean value.

• In part (b), many students missed the case wherein the point lies exactly on the diagonal.

• In part (b), some students' solutions had code that would result in a division by 0.

• In part (b), many students had syntax errors like not having an open bracket before a function call.

• In part (b), many students did not use an uppercase letter for their symbols, e.g. `upper` instead of `Upper`. It is highly encouraged to pay attention to small details like these since the function now produces the incorrect result.
Question 5c

- In part (c), many students missed to check for 'None.
- In part (c), many students missed the case wherein the point lies outside the triangle.
- In part (c), many students missed the case where the point lies exactly on the diagonal.
- In part (c), some students did not call the provided function distance and instead reimplemented the distance function into their solution.
- In part (c), some students reimplemented is-inside? as a helper function. Although no marks were deducted, students are encouraged to make full use of what is given to them so they may manage their time wisely on an examination.
- In part (c), some students used is-inside? as a value instead of a function.