Examples of Plagiarism in Mathematical work.

Please note that the following examples are **not** an exhaustive list of possible forms of plagiarism.

Two students work on a problem together, and write up their solutions together. [Variation: Student #2 copies the solution to a problem from the textbook's solution manual.]

Example:

Question*: A square-bottomed box with no top has a fixed volume, *V*. What dimensions minimize the surface area?

Student #1:	Student #2:
Volume: $V = x^2 y$ Surface: $S = x^2 + 4xy = x^2 + 4xV/x^2 = x^2 + 4V/x$ To find the dimensions which minimize the area, find *x* such that $dS/dx = 0$. $$\frac{dS}{dx} = 2x - \frac{4V}{x^2} = 0,$$ so $x^3 = 2V$, and solving for *x* gives $x = \sqrt[3]{2V}$. To see that this gives a minimum, note that for small *x*, $S \approx 4V/x$ is decreasing. For large *x*, $S \approx x^2$ is increasing. Since there is only one critical point, it must give a global minimum. Using *x* to find *y* gives $y = V/x^2 = V/(2V)^{2/3} = \sqrt[3]{V/4}$.	Volume: $V = x^2 y$ Surface: $S = x^2 + 4xy = x^2 + 4xV/x^2 = x^2 + 4V/x$ To minimize the area, we'll find *x* so that $dS/dx = 0$. $$\frac{dS}{dx} = 2x - \frac{4V}{x^2} = 0,$$ so $x^3 = 2V$, and hence $x = \sqrt[3]{2V}$. To show that this is a minimum, note that when *x* is small, $S \approx 4V/x$ is decreasing, while when *x* is large, $S \approx x^2$ is increasing. Since $x = \sqrt[3]{2V}$ is the only critical point, it must be a global minimum. Plugging in *x* to find *y* gives $y = V/x^2 = V/(2V)^{2/3} = \sqrt[3]{V/4}$.

A student's solution starts out as their own work, but at some point they "punt" and copy down the answer from the back of the textbook, with no indication of how (or whether) it follows from their own work. [Variant: A student might jot down a final answer to a definite integral problem gotten from a graphing calculator, even if it is inconsistent with their prior work.]

Example:

Question: Find $\int_0^{\pi/4} \sin(2x)\ dx$

Student solution: $\int_0^{\pi/4} \sin(2x)\ dx = \sin(x^2)\Big|_0^{\pi/4} = \sin(\frac{\pi^2}{16}) - \sin(0^2) = \frac{1}{2}$

* Problem 10, from Section 4.5 of *Calculus (3rd ed)* by Hughes-Hallet et al. Student #1's response is from the *Instructor's Solution Manual* for this text.