Piecewise: Computation Practice 1

This is a practice understanding of piecewise functions from an analytic viewpoint.

Problem 1 *Consider the following piecewise function:*

$$f(x) = \begin{cases} 3\,x + 8 & -11 \leq x \leq -5 \\ -2\,e^{(x-2)} + 1 & -5 < x \leq -4 \\ 2\,\sqrt{|x+4|} - 1 & -4 < x \leq 2 \end{cases}$$

Evaluate $f(0) =$ $\boxed{3}$

Feedback(attempt): *To evaluate, find the row that has the input in the listed domain span. Once you find the correct row, plug the input in as the x-value into the function in that row to find the value of the piecewise function at that input.*

Problem 2 *Consider the following piecewise function:*

$$f(x) = \begin{cases} -3\,\sqrt{|x-5|} + 1 & 4 \leq x \leq 10 \\ 2\,x + 4 & 10 < x \leq 11 \\ -2\,\sqrt{|x+4|} - 2 & 11 < x \leq 13 \end{cases}$$

Evaluate $f(4) =$ $\boxed{-2}$

Feedback(attempt): *To evaluate, find the row that has the input in the listed domain span. Once you find the correct row, plug the input in as the x-value into the function in that row to find the value of the piecewise function at that input.*

Problem 3 *Consider the following piecewise function:*

$$f(x) = \begin{cases} 4\,e^{(x+3)} + 3 & -9 \leq x \leq -3 \\ 3\,\ln\left(|x-2|+1\right) & -3 < x \leq -2 \\ 4\,(x-5)^3 - 4 & -2 < x \leq 5 \end{cases}$$

Evaluate $f(5) =$ $\boxed{-4}$

Feedback(attempt): *To evaluate, find the row that has the input in the listed domain span. Once you find the correct row, plug the input in as the x-value into the function in that row to find the value of the piecewise function at that input.*

Problem 4 *Consider the following piecewise function:*

$$f(x) = \begin{cases} -4\,(x-3)^2 - 4 & -6 \leq x \leq 1 \\ -5\,(x+1)^3 + 5 & 1 < x \leq 2 \\ 2\,e^{(x+3)} - 3 & 2 < x \leq 5 \end{cases}$$

Evaluate $f(-4) =$ $\boxed{-200}$

Learning outcomes:

Feedback(attempt): *To evaluate, find the row that has the input in the listed domain span. Once you find the correct row, plug the input in as the x-value into the function in that row to find the value of the piecewise function at that input.*

Problem 5 *Consider the following piecewise function:*

$$f(x) = \begin{cases} 5\,x - 11 & -3 \leq x \leq -1 \\ 3\,\ln\left(|x+1|+1\right) - 2 & -1 < x \leq 2 \\ 4\,(x-2)^2 - 2 & 2 < x \leq 5 \end{cases}$$

Evaluate $f(-3) = \boxed{-26}$

Feedback(attempt): *To evaluate, find the row that has the input in the listed domain span. Once you find the correct row, plug the input in as the x-value into the function in that row to find the value of the piecewise function at that input.*
