

Name: _____
AP Calculus AB: Evaluating Definite Integrals of Piecewise Functions

Date: _____
Ms. Loughran

1. Evaluate $\int_0^8 h(x) dx$ if $h(x) = \begin{cases} 4 & , x < 4 \\ x & , x \geq 4 \end{cases}$

2. Evaluate $\int_0^4 g(x) dx$ if $g(x) = \begin{cases} 2x - 5 & , x < 2 \\ x^2 & , x \geq 2 \end{cases}$

3. Given $f(x) = \begin{cases} -x^3 & , x < -2 \\ -3x + 2 & , -2 \leq x < \pi \\ \sin x & , x \geq \pi \end{cases}$

Find : (a) $\int_{-3}^0 f(x) dx$

(b) $\int_{-3}^5 f(x) dx$

4. Evaluate $\int_{-2}^5 f(x) dx$ if $f(x) = \begin{cases} -2x^2 & , x < 0 \\ 5x & , 0 \leq x < 2 \\ \frac{1}{x} & , x \geq 2 \end{cases}$

5. Evaluate $\int_{-3}^1 h(x) dx$ if $h(x) = \begin{cases} 0 & , x \leq 0 \\ 5e^{-5x} & , x > 0 \end{cases}$

6. Evaluate $\int_{-2}^4 f(x) dx$ if $f(x) = \begin{cases} 0 & , x < -1 \\ 9x & , -1 \leq x < 3 \\ 3e^x & , 3 \leq x \leq 5 \\ 0 & , x > 5 \end{cases}$

7. Evaluate $\int_{-3}^0 h(x) dx$ if $h(x) = |x + 2|$