## <u>AP CALCULUS Worksheet – Evaluating Definite Integrals</u>

 $1) \int_0^1 2x \, dx$ 

2)  $\int_{-1}^{0} (x-2) dx$ 

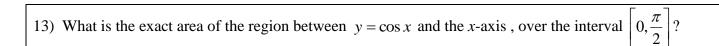
3)  $\int_{-1}^{1} (t^2 - 2) dt$ 

4)  $\int_0^1 (2t-1)^2 dt$ 

5)  $\int_{1}^{2} \left( \frac{3}{x^2} - 1 \right) dx$ 

6)  $\int_{-1}^{1} (t^{1/3} - 2) dt$ 

7) $\int_{-1}^{0} (t^{1/3} - t^{2/3}) dt$	8) $\int_{-1}^{4}  2x - 4  dx$
$9) \int_0^\pi (1+\sin x)  dx$	10) $\int_{-\pi/6}^{\pi/6} (\sec^2 x)  dx$
11) $\int_{-\pi/3}^{\pi/3} (4 \sec \theta \tan \theta) d\theta$	12) What is the exact area of the region between $y = x - x^2$ and the <i>x</i> -axis, over the interval [0, 1]?



For #14 – 19: Suppose that f and g are continuous functions with the below given information, then use the properties of definite integrals to evaluate each expression.

$$\int_{1}^{2} f(x) \, dx = -4, \qquad \int_{1}^{5} f(x) \, dx = 6, \qquad \int_{1}^{5} g(x) \, dx = 8$$

14) 
$$\int_{2}^{2} g(x) dx$$
 17)  $\int_{2}^{5} f(x) dx$ 

15) 
$$\int_{5}^{1} g(x) dx$$
 18)  $\int_{1}^{5} [f(x) + g(x)] dx$ 

16) 
$$\int_{1}^{2} 3 f(x) dx$$
 19)  $\int_{1}^{5} [4 f(x) - g(x)] dx$ 

For #20 – 26: Suppose that f and g are continuous functions with the below given information, then use the properties of definite integrals to evaluate each expression.

$$\int_{1}^{9} f(x) \, dx = -1, \qquad \int_{7}^{9} f(x) \, dx = 5,$$

$$\int_7^9 f(x) \, dx = 5,$$

$$\int_7^9 h(x) \, dx = 4$$

20) 
$$\int_{9}^{1} f(x) dx$$

24) 
$$\int_{7}^{9} [f(x) + h(x)] dx$$

21) 
$$\int_{1}^{7} f(x) \, dx$$

25) 
$$\int_{7}^{9} [2 f(x) - 3 h(x)] dx$$

22) 
$$\int_{9}^{7} [h(x) - f(x)] dx$$

23) 
$$\int_{1}^{9} -2 f(x) dx$$