NAME:_____ DATE:_____

AP CALCULUS Worksheet – Evaluating Definite Integrals

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

7) $\int_{-1}^{0}(t^{1/3}-t^{2/3})dt$	8) $\int_{-1}^{4}\lvert 2x-4\rvert dx$
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 x-axis , over the interval [0, 1]?

13) What is the exact area of the region between $y = \cos x$ and the x-axis , over the interval $\left[0, \frac{\pi}{2}\right]$?

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.

$$\int_1^9 f(x)\,dx = -1, \qquad \int_7^9 f(x)\,dx = 5, \qquad \int_7^9 h(x)\,dx = 4$$

20) $\int_9^1 f(x)\,dx$

21) $\int_1^7 f(x)\,dx$

22) $\int_9^7 [h(x) - f(x)]\,dx$

23) $\int_1^9 -2\,f(x)\,dx$

24) $\int_7^9 [f(x) + h(x)]\,dx$

25) $\int_7^9 [2\,f(x) - 3\,h(x)]\,dx$