Some AP-like Review Questions

$f(x)$ is a continuous function such that $\int_a^b f(x)\,dx = 6$ and $\int_c^a f(x)\,dx = 10$.

Therefore, $\int_b^c f(x)\,dx =$

A) -16 B) -4 C) 0 D) 4 E) 16

$\int_0^{\frac{\pi}{3}} \cos x\,dx$

A) $\frac{1}{2}$ B) $1-\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$ - 1 D) $-\frac{\sqrt{3}}{2}$ E) $\frac{\sqrt{3}}{2}$

14. From Salas, Hille, Etgen:

Let $F(x) = 2x + \int_0^x \frac{\sin(2t)}{1+t^2}dt$. Determine: (a) F(0), (b) $F'(0)$, (c) $F''(0)$.

Find F'(x) given:

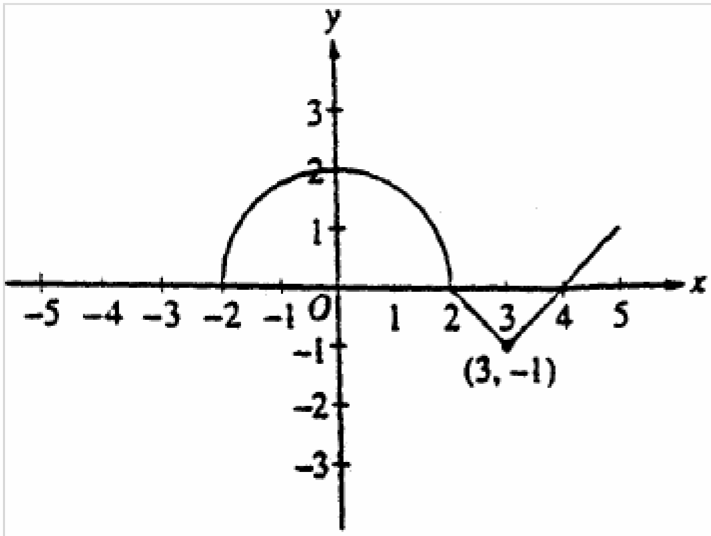
(a) $F(x) = \int_x^5 3t\sin t\;dt$

(b) $F(x) = \int_0^{3x} \frac{1}{t^4+1}dt$

(c) $F(x) = \int_{2x}^{x^2} \frac{1}{2+e^t}dt$

From: Houston ACT webpage

1997 AB/BC 5 Free Response:



The graph of a function f consists of a semicircle and two line segments as shown above. Let g be the function given by $g(x) = \int_0^x f(t)dt$.

(a) Find $g(3)$.

(b) Find all values of x on the open interval (-2, 5) at which g has a relative maximum. Justify your answer.

(c) Write an equation for the line tangent to the graph of g at $x = 3$.

(d) Find the x-coordinate of each point of inflection of the graph of g on the open interval (-2,5). Justify your answer.