AP Calculus AB

The Accumulation Function

1) $g(x) = \int_0^x f(t)\,dt$

a) $g(0) = 0$

b) $g(1) = \frac{1}{2}(1)(3)$

c) $g(2) = 0$

d) $g(-2) = 0$

2) $g(x) = 2x + \int_0^x f(t)\,dt$

a) $g(0) = 0$

b) $g(3) = 6 + \int_0^3 f(t)\,dt = 6$

c) $g(-3) = -6 + \int_0^{-3} f(t)\,dt$

$= -6 - \frac{1}{4}\pi(9) = -6 - \frac{9\pi}{4}$

d) $g(-4) = -8 + \int_0^{-4} f(t)\,dt$

$= -8 - \frac{9\pi}{4} + \frac{1}{4}\pi = -8 - 2\pi$

3) $g(x) = 5 + \int_0^x f(t)\,dt$

a) $g(3) = 5 + \int_0^3 f(t)\,dt$

$= 5 + \frac{1}{4}\pi(2)^2 + \frac{1}{2}(1)(3)$

$= \frac{13}{2} + \pi$

b) $g(-2) = 5 + \int_0^{-2} f(t)\,dt$

$= 5 - \pi$

c) $g(5) = 5 + \int_0^5 f(t)\,dt$

$= 5 + \pi + \frac{1}{2}\left(\frac{5}{2}\right)(3) - \frac{1}{2}\left(\frac{1}{2}\right)(1)$

$= \frac{17}{2} + \pi$

4) $g(x) = \int_1^x f(t)\,dt$

a) $g(0) = \int_1^0 f(t)\,dt = 1$

b) $g(5) = \int_1^5 f(t)\,dt$

$= 3$

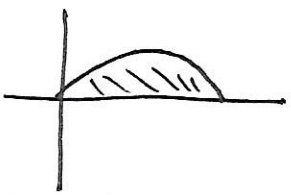
c) $g(-3) = -1$

5) $\int_1^2 (x^2 + 3x - 2)\,dx$

$\frac{1}{3}x^3 + \frac{3}{2}x^2 - 2x + C \Big|_1^2$

$\left(\frac{8}{3} + 6 - 4\right) - \left(\frac{1}{3} + \frac{3}{2} - 2\right)$

6) $\int_0^\pi \sin x\,dx = -\cos x + C \Big|_0^\pi$



$(-\cos\pi) - (-\cos 0)$

$1 + 1$

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