2003 Form B AB5/BC5

A.

$$g(3) = \int_2^3 f(t)dt = \frac{1}{2}(4+2) = 3$$

$$g'(3) = f(3) = 2$$

$$g''(3) = f'(3) = \frac{4-0}{2-4} = -2$$

B.

$$\frac{g(3)-g(0)}{3} = \frac{1}{3}\int_0^3 f(t)dt$$

$$= \frac{1}{3}\left(\frac{1}{2}(2)(4) + \frac{1}{2}(4+2)\right)$$

$$= \frac{7}{3}$$

C. Since g'(x) = f(x) we need to know where the function f equals 7/3. Another way to say this is $\frac{7}{3} = g'(c) = f(c)$. This can be done by drawing a horizontal line at f = 7/3. This horizontal line crosses the function twice in the given interval.

D. There are two locations where there could be a point of inflection because g" changes sign twice. Since g"is represented by the slope of the f function these locations are at t = 2 and t = 5.