Name: ______________________________ Date: _______________ Period: ____ Row: ______

Assignment #: _____

1)

If $f(x)=\int_0^x \frac{1}{\sqrt{t^3+2}}\,dt$, which of the following is FALSE?

(A) $f(0)=0$

(B) f is continuous at x for all $x \geq 0$

(C) $f(1)>0$

(D) $f'(1)=\frac{1}{\sqrt{3}}$

(E) $f(-1)>0$

2)

If F and f are continuous functions such that $F'(x)=f(x)$ for all x, then $\int_a^b f(x)\,dx$ is

(A) $F'(a)-F'(b)$

(B) $F'(b)-F'(a)$

(C) $F(a)-F(b)$

(D) $F(b)-F(a)$

(E) none of the above

3)

$\frac{d}{dx}\int_2^x \sqrt{1+t^2}\,dt=$

(A) $\frac{x}{\sqrt{1+x^2}}$ (B) $\sqrt{1+x^2}-5$ (C) $\sqrt{1+x^2}$ (D) $\frac{x}{\sqrt{1+x^2}}-\frac{1}{\sqrt{5}}$

(E) $\frac{1}{2\sqrt{1+x^2}}-\frac{1}{2\sqrt{5}}$

4)

If the function f has a continuous derivative on $[0,c]$, then $\int_0^c f'(x)\,dx=$

(A) $f(c)-f(0)$ (B) $|f(c)-f(0)|$ (C) $f(c)$ (D) $f(x)+c$

(E) $f''(c)-f''(0)$

5)

If $F(x)=\int_1^{x^2}\sqrt{1+t^3}\,dt$, then $F'(x)=$

(A) $2x\sqrt{1+x^6}$ (B) $2x\sqrt{1+x^3}$ (C) $\sqrt{1+x^6}$ (D) $\sqrt{1+x^3}$

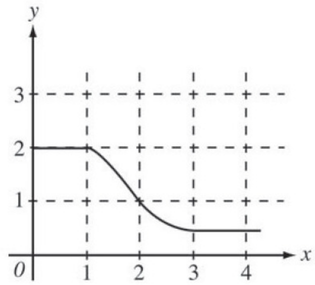
(E) $\int_1^{x^2}\frac{3t^2}{2\sqrt{1+t^3}}\,dt$

6)

$\frac{d}{dx}\int_0^x \cos(2\pi u)\,du$ is

(A) 0 (B) $\frac{1}{2\pi}\sin x$ (C) $\frac{1}{2\pi}\cos(2\pi x)$ (D) $\cos(2\pi x)$ (E) $2\pi\cos(2\pi x)$

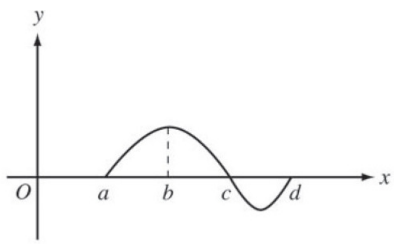
7)



The graph of f is shown in the figure above. If $\int_1^3 f(x)\,dx = 2.3$ and $F'(x) = f(x)$, then $F(3) - F(0) =$

(A) 0.3 (B) 1.3 (C) 3.3 (D) 4.3 (E) 5.3

8)



The graph of f is shown in the figure above. If $g(x) = \int_a^x f(t)\,dt$, for what value of x does $g(x)$ have a maximum?

(A) a (B) b (C) c (D) d
(E) It cannot be determined from the information given.

9)

Let $f(x) = \int_0^{x^2} \sin t\,dt$. At how many points in the closed interval $\left[0, \sqrt{\pi}\right]$ does the instantaneous rate of change of f equal the average rate of change of f on that interval?

(A) Zero
(B) One
(C) Two
(D) Three
(E) Four

10)

If f is the antiderivative of $\dfrac{x^2}{1+x^5}$ such that $f(1) = 0$, then $f(4) =$

(A) -0.012 (B) 0 (C) 0.016 (D) 0.376 (E) 0.629