Name:	**ID:**	**Sec: 10**

MATH-102 Term-142 Lcq-3

(Circle one letter and show all your work)

1)The average value of the function $f(x)=\frac{\tan x}{x^2+1}+\sqrt{4-x^2}$ over the interval [-2,2] is

(a) 0

(b) π/4

(c) π/3

(d) $\pi/2$

(e) π

(f) None of the above

2) $\int_0^1 \frac{e^{\tan^{-1}x}}{1+x^2}dx =$

(a) $1-e^{\pi/2}$

(b) $e^{\pi}-\pi$

(c) $e^{\pi/2}-1$

(d) $e^{-\pi/4}-2$

(e) $e^{\pi/4}-1$

(f) None of the above

3) $\int_0^1 (1+x)\sqrt{4-4x}dx =$

(a) 28/15

(b) 15/28

(c) 14/15

(d) 28/13

(e) 15/13

(f) None of the above

4) If g is a continuous function such that $\int_0^{2x} e^{t/2}g(t)dt = \frac{1}{2}xe^x$, then g(4) =

(a) 4/3

(b) 2/3

(c) 3/2

(d) 4/5

(e) 3/4

(f) None of the above

5) The area of the region enclosed by the curves $y^2=-x$ and the line $x+y+2=0$ is equal to

(a) 7/2

(b) 0

(c) 1

(d) **9/2**

(e) 5/2

(f) None of the above

(Circle one letter and show all your work)

6) The area of the region enclosed by the curve $y = 4 - x^2$ and the lines $y = 2x - 4$ and $y = 4$ is equal to

(a) $\int_0^4 ((4x - x^2) - (2x - 4))dx$

(b) $\int_2^4 ((y/2 + 2) - \sqrt{4 - y})dx$

(c) $\int_0^4 ((y/2 + 2) + \sqrt{4 - y})dx$

(d) $\int_0^4 ((y/2 + 2) - \sqrt{4 - y})dx$

(e) $\int_0^2 ((2x - 4) - (4 - x^2))dx$

(f) None of the above

7) Let P be a partition of the interval [0, 2], then the limit $\lim_{\|P\| \to 0} \sum_{k=1}^{n} \left[c_k + c_k^2\right] \Delta x_k =$

(a) 12/3

(b) **14/3**

(c) 16/3

(d) 18/3

(e) 20/3

(f) None of the above

8) If $F(x) = \int_{1/2}^{2x} f(t)dt$ and $f(t) = \int_{1/2}^{t^2} \frac{\sqrt{1+u^2}}{u} dt$ then $F''(1) =$

(a) $5\sqrt{17}$

(b) $4\sqrt{17}$

(c) $3\sqrt{17}$

(d) $2\sqrt{17}$

(e) $\sqrt{17}$

(f) None of the above

9) $\int_0^{\frac{\pi}{4}} (\sec x + \cos x)^2 dx =$

(a) (5π+10)/8

(b) (4π+10)/8

(c) (3π+10)/8

(d) (2π+10)/8

(e) (π+10)/8

(f) None of the above

10) $\int \frac{\ln(\tan^{-1} x)}{(x^2 + 1)\tan^{-1} x} dx =$

(a) $\left[\ln(\tan^{-1} x)\right]^2 + C$

(b) $\frac{1}{2}\left[\ln(\tan^{-1} x)\right] + C$

(c) $\frac{1}{2}\left[\ln(\tan^{-1} x)\right]^2 + C$

(d) $\frac{1}{2}\left[\tan^{-1} x\right]^2 + C$

(e) $\ln(\tan^{-1} x) + C$

(f) None of the above