

Name:**ID:****Sec:** 8(9:00AM) 9(10:00AM)

MATH-102

Term-152

Long Class-QUIZ-5 FormB

(circle one letter only)

1) Using four rectangles and the midpoint rule, the area under the graph of $f(x) = 1 + x^2$ from $x = 0$ to $x = 4$ is approximately equal to

- (a) 27
- (b) 20
- (c) 30
- (d) 18
- (e) 25**
- (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) $e^{\pi/4} - 1$**
- (e) $e^{-\pi/4} - 2$
- (f) None of the above

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

- (a) 14/15
- (b) 15/28
- (c) 28/15**
- (d) 28/13
- (e) 15/13
- (f) None of the above

4) If g is a continuous function such that

$$\int_0^{2x} e^{t/2} g(t) dt = \frac{1}{2} x e^x, \text{ then } g(4) =$$

- (a) 4/3
- (b) 3/4**
- (c) 3/2
- (d) 4/5
- (e) 2/3
- (f) None of the above

5) The base of a solid is bounded by the curves $y = x^2$, $y = 0$ and $x = 1$. If the cross-sections perpendicular to the x -axis are semi-circles, then the volume of the solid is

- (a) $4/\pi$
- (b) $40/\pi$
- (c) $\pi/4$
- (d) $\pi/40$**
- (e) 2π
- (f) None of the above

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

- (a) 9/2**
- (b) 7/2
- (c) 1
- (d) 0
- (e) 5/2
- (f) None of the above

(circle one letter)

7) $\int_{-2}^2 \left(\frac{x^2 \tan x}{x^2 + 1} + \sqrt{4 - x^2} \right) dx =$

- (a) 0
- (b) $\pi/4$
- (c) $\pi/3$
- (d) π
- (e) $\pi/2$
- (f) None of the above

8) The region in the first quadrant enclosed by the parabolas $y = x^2$, $y = 2 - x^2$, and the y-axis is rotating about the line $y = -1$, then the volume of the solid generated is given by

- (a) $\int_0^1 \pi(1 - x^4) dx$
- (b) $\int_0^2 8\pi(1 + x^2) dx$
- (c) $\int_0^1 4\pi(1 - x^2) dx$
- (d) $\int_0^1 8\pi(1 - x^2) dx$
- (e) $\int_0^1 4\pi(1 + x^2) dx$
- (f) None of the above

9) If f is an even function such that $\int_{-3}^3 f(t) dt = 10$ and $\int_{-2}^2 f(t) dt = 16$, then $\int_{\sqrt{2}}^{\sqrt{3}} 2xf(x^2) dx =$

- (a) 0
- (b) 3
- (c) -3
- (d) 8
- (e) -5
- (f) None of the above

10) If $F(x) = \int_{1/2}^{2x} f(t) dt$ and $f(t) = \int_{1/2}^t \frac{\sqrt{1+u^2}}{u} dt$ 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

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

- (a) $(5\pi+10)/8$
- (b) $(4\pi+10)/8$
- (c) $(3\pi+10)/8$
- (d) $(5\pi+10)/8$
- (e) $(2\pi+10)/8$
- (f) None of the above

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

- (a) $\frac{1}{2} [\ln(\tan^{-1} x)] + C$
- (b) $\frac{1}{2} [\ln(\tan^{-1} x)]^2 + C$
- (c) $[\ln(\tan^{-1} x)]^2 + C$
- (d) $\frac{1}{2} [\tan^{-1} x]^2 + C$
- (e) $\ln(\tan^{-1} x) + C$
- (f) None of the above