Question 1

1 points

Using the Disks/Washers method, the volume of the solid generated by revolving the region bounded by the graphs of the functions $x = 3\sqrt{y}$, $x = 0$, $y = 9$ about the y-axis is given by

- A. $\pi \int_0^3 [(\frac{x^2}{9})^2 - 9^2]dx$

- B. $\pi \int_0^9 (9y)^2 dy$

- C. $\pi \int_0^9 9y dy$

- D. $\pi \int_0^3 [9^2 - (\frac{x^2}{9})^2]dx$

Question 2

The partial fraction decomposition of $\frac{1}{(x-1)^2(x+2)}$ takes the form

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

Question 3

0.5 points

If polar coordinate for a point is $\left(1, \frac{\pi}{3}\right)$, then another representation for this point is:

- A. $\left(-1, \frac{\pi}{3} + \pi\right)$
- B. $\left(-1, \frac{\pi}{3}\right)$
- C. $\left(-1, -\frac{\pi}{3}\right)$
- D. $\left(1, -\frac{\pi}{3}\right)$

Question 4

0.5 points

The formula $\cosh(4x)sech(4x)$ is equal to

- ○ A. e^{4x}
- ● B. 1
- ○ C. $4x$
- ○ D. 4

Question 5

0.5 points

$\int e^x \sin(e^x)\, dx$ equals

- A. $-\cos(e^x)+c$
- B. $-e^x\cos(e^x)+c$
- C. $\sin(e^x)+c$
- D. $-e^x\cos(x)+c$

Question 6

1 points

The best substitution to evaluate $\int \frac{\sqrt{x}-5}{\sqrt[3]{x^2}+5}\,dx$ is:

- ○ $u=\sqrt[6]{x}$
- ○ $u=\sqrt[3]{x^2}$
- ○ $x=\sqrt[5]{u}$
- ○ $u=\sqrt[6]{x^2}$

Question 7

The arc length of the graph of $y=\frac{\sqrt{2}}{3}x^{\frac{3}{2}}+6,\ 0\leq x\leq 1$equlas

- A. $\frac{3}{4}\left[\left(\frac{3}{2}\right)^{\frac{3}{2}}-1\right]$
- B. $\frac{4}{3}\left[\left(\frac{3}{2}\right)^{\frac{3}{2}}-1\right]\pi$
- C. $\frac{2}{3}\left[(17)^{\frac{1}{2}}-1\right]$
- D. $\frac{4}{3}\left[\left(\frac{3}{2}\right)^{\frac{3}{2}}-1\right]$

Question 8

The Cartesian equation represented by the parametric equations $x = t - 2$ and $y = t^2 + 1$ is:

- A. $y = x^2 + 1$
- B. $y = x^2 + 4x + 3$
- C. $y = x^2 + 4x + 5$
- D. $x = y^2 + 4y + 5$

Question 9

The area inside the graph of the polar equation $r = 3\cos\theta,\ 0 \le \theta \le \frac{\pi}{4}$ is given by

- ◯ A. $2\int_0^{\frac{\pi}{4}} (3\cos\theta)^2 d\theta$
- ◯ B. $\int_0^{\frac{\pi}{4}} (3\cos\theta)^2 d\theta$
- ◉ C. $\frac{1}{2}\int_0^{\frac{\pi}{4}} (3\cos\theta)^2 d\theta$
- ◯ D. $\frac{1}{2}\int_0^{\frac{\pi}{4}} (3\cos\theta) d\theta$

Question 10

0.5 points

If a point P has polar coordinates: $(r,\theta) = (2,\pi)$, then its (x,y) coordinate is:

- A. $(2,0)$
- B. $(\sqrt{2},0)$
- C. $(-2\sqrt{2},0)$
- D. $(-2,0)$

Question 11

A polar equation corresponding to the rectangular equation $x^2+y^2=3$ is

- ◉ A. $r=\sqrt{3}$
- ○ B. $r=3$
- ○ C. $r=9$
- ○ D. $\theta=\frac{\pi}{3}$

Question 12 1 points

If $F(x)=\int_0^{x^2} t^2e^t\,dt$, *then the value of x which satisfies* $5+x\,F'(0)=x$ *is:*

- A. 1
- B. 0
- C. -5
- D. 5

Question 13

$$\int_0^{\infty} \frac{x}{1+x^2}\,dx$$

- A. Diverges
- B. Converges to 2
- C. Converges to 0
- D. Converges to 1

Question 13

$$\int_0^{\infty} \frac{x}{1+x^2}\,dx$$

- [x] A. Diverges
- [ ] B. Converges to 2
- [ ] C. Converges to 0
- [ ] D. Converges to 1

Question 14

0.5 points

A polar coordinate representation of the rectangular point $\left(-1, \sqrt{3}\right)$ is:

○ A. $\left(2, -\frac{\pi}{3}\right)$

◉ B. $\left(-2, -\frac{\pi}{3}\right)$

○ C. $\left(1, -\frac{\pi}{3}\right)$

○ D. $\left(2, \frac{\pi}{3}\right)$

Question 15

1 points

Let R be the region between the graphs of the functions $x = y^2 - 2$, $x = y$, then the area of R as a single integral is given by

A. $A = \int_{-1}^{2} (y - y^2 + 2)\,dy$

B. $A = \int_{-1}^{2} (y^2 - 2)\,dy$

C. $A = \int_{-1}^{2} (y^2 - y - 2)\,dy$

D. $A = \int_{-1}^{2} (2 + y^2 - y)\,dy$

Question 16

0.5 points

The parametric equation $x = t + 1$ and $y = 6t - 7$, represents:

- (selected) A. a line
- B. a hyperbola
- C. a circle
- D. a parabola

Question 17

0.5 points

If $y = \log_5(x)$, *then y is equal to*

- A. $y = \dfrac{\ln 5}{\ln x}$
- B. $y = \ln(5)\ln(x)$
- C. $y = \dfrac{\ln x}{5}$
- D. $y = \dfrac{\ln x}{\ln 5}$

Question 18

1 points

The integral $\int x^2 \cosh(x^3 + 1)dx$ is equal to

- A. $\frac{1}{3}\cosh^3(x^3+1)+C$
- B. $\frac{1}{3}\sinh x + C$
- C. $\sinh(x^3+1) + C$
- D. $\frac{1}{3}\sinh(x^3+1) + C$

Question 19

The substitution $x = sec\theta$ transforms the integral $\int_{1}^{\frac{2}{\sqrt{3}}} x\sqrt{x^2-1}\,dx$ into:

- ○ A. $\int_{0}^{\frac{\pi}{6}} sec\theta\tan^3\theta\,d\theta$
- ○ B. $\int_{0}^{\frac{\pi}{3}} sec\theta\tan^3\theta\,d\theta$
- ◉ C. $\int_{0}^{\frac{\pi}{6}} sec^2\theta\tan^2\theta\,d\theta$
- ○ D. $\int_{0}^{\frac{\pi}{3}} sec^2\tan^2\theta\,d\theta$

Question 20

The polar equation $r = 2\sin 2\theta$, represents:

- A. a two-leaved rose
- B. a circle
- C. cardioid
- D. a four-leaved rose

Question 21

If $f(x) = x^3 e^{2x}$, *then* $f'(x)$

- ○ A. $3x^2 + 2e^{2x}$
- ○ B. $6e^{2x} x^2$
- ◉ C. $(3 + 2x) x^2 e^{2x}$
- ○ D. $3x^2 e^{2x}$

Question 22

The best substitution to solve the integral $\int\sqrt{9+x^2}\,dx$ is:

- A. $x = 3sec\theta$
- B. $x = 3\tan\theta$ (selected)
- C. $x = \frac{1}{3}\tan\theta$
- D. $x = \frac{1}{3}sec\theta$

Question 23

1 points Save Answer

The integral $\int \tan^2 x \; sec^4 x \; dx$ equals

- A. $\frac{1}{3}\tan^3 x - \frac{1}{5}\tan^5 x + C$
- B. $-\frac{1}{3}\tan^3 x + \frac{1}{5}\tan^5 x + C$
- C. $-\frac{1}{3}\tan^3 x - \frac{1}{5}\tan^5 x + C$
- D. $\frac{1}{3}\tan^3 x + \frac{1}{5}\tan^5 x + C$

Question 24

The rectangular equation corresponding to the polar equation $r = 2\, e^{3r\sin\theta} \sec\theta$ is

- A. $y = 2e^{3x}$
- B. $y = e^{x}$
- C. $x = e^{3y}$
- D. $x = 2e^{3y}$

Question 24

0.5 points

The rectangular equation corresponding to the polar equation $r = 2\,e^{3r\sin\theta}\sec\theta$ is

- ○ A. $y = 2e^{3x}$
- ○ B. $y = e^{x}$
- ○ C. $x = e^{3y}$
- ◉ D. $x = 2e^{3y}$

Question 25

If $F(x) = cot(x)\ coth(x)$, then $F'(x)$ equals

- A. $csc^2(x)\ coth(x) + cot(x)\ csch^2$
- B. $-csc^2(x)\ coth(x) - cot(x)\ csch^2(x)$
- C. $sec^2(x)\ \tanh(x) + \tan(x) sech^2(x)$
- D. $sech^2(x)\ \tanh(x) - \tanh(x) sec^2(x)$

Question 27

The integral $\int x f''(x)dx$ is equal:

- A. $xf'(x) - f(x) + c$
- B. $\frac{x^2}{2} f(x) + c$
- C. $xf'(x) + f(x) + c$
- D. $\frac{x^2}{2} f'(x) + c$