1. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_23.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = 4 - x^2$ and $y = 0$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `0`
- `8/5`

2. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_24.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $3x + 2y = 6$, $y = 0$, and $x = 0$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `2/3`
- `1`

3. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_25.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = e^x$, $y = 0$, $x = 0$, and $x = 1$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `1/(exp(1)-1)`
- `(exp(1)+1)/4`

4. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_26.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = 1/x$, $y = 0$, $x = 1$, and $x = 2$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `1/ln(2)`
- `1/(4*ln(2))`

5. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_27.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = \sqrt{x}$ and $y = x$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `2/5`
- `1/2`

6. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_28.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = x + 2$ and $y = x^2$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `1/2`
- `8/5`

7. **(1 pt) Library/UCSB/Stewart5_8_3/Stewart5_8_3_29.pg**

Find the exact coordinates of the centroid for the region bounded by the curves $y = \sin(x)$, $y = \cos(x)$, $x = 0$, and $x = \pi/4$.

$\bar{x} =$ _____

$\bar{y} =$ _____

Correct Answers:

- `(pi*sqrt(2)-4)/(4*(sqrt(2)-1))`
- `1/(4*(sqrt(2)-1))`

1. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_6.pg**

Consider the integral

$$\int_{-\infty}^{0} \frac{-3}{2x-5}\,dx$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- D

2. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_8.pg**

Consider the integral

$$\int_{0}^{\infty} \frac{3x}{(x^2+2)^2}\,dx$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- 3/4

3. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_10.pg**

Consider the integral

$$\int_{-\infty}^{-1} 1e^{-2t}\,dt$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- D

4. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_12.pg**

Consider the integral

$$\int_{-\infty}^{\infty} (-3-v^4)\,dv$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- D

5. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_18.pg**

Consider the integral

$$\int_{0}^{\infty} \frac{-10}{z^2+3z+2}\,dz$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- -10*ln(2)

6. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_20.pg**

Consider the integral

$$\int_{-\infty}^{6} -5re^{r/3}\,dr$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- 9*-5*exp(2)

7. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_28.pg**

Consider the integral

$$\int_{0}^{3} \frac{-10}{x\sqrt{x}}\,dx$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- D

8. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_32.pg**

Consider the integral

$$\int_{0}^{1} \frac{-1}{\sqrt{1-x^2}}\,dx$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- -1*pi/2

9. **(1 pt) Library/UCSB/Stewart5_7_8/Stewart5_7_8_40.pg**

Consider the integral

$$\int_{0}^{1} \frac{-2\ln(x)}{\sqrt{x}}\,dx$$

If the integral is divergent, type an upper-case "D". Otherwise, evaluate the integral.

Correct Answers:

- -2*-4

1. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_1.pg**

Use the arc length formula to find the length of the curve

$$y = 2 - 3x, \quad -2 \le x \le 1.$$

You can check your answer by noting the shape of the curve.

Arc length = _____

Correct Answers:

- `3*sqrt(10)`

2. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_3.pg**

Find the exact length of the curve

$$y = \frac{2}{3}(x^2 - 1)^{3/2}, \quad 1 \le x \le 3.$$

Arc length = _____

Correct Answers:

- `46/3`

3. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_4.pg**

Find the exact length of the curve

$$y = \frac{x^3}{6} + \frac{1}{2x}, \quad \frac{1}{2} \le x \le 1.$$

Arc length = _____

Correct Answers:

- `31/48`

4. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_5.pg**

Find the length of the curve

$$y = 1 + 6x^{3/2}, \quad 0 \le x \le 1.$$

Arc length = _____

Correct Answers:

- `164/243*82^(1/2)-2/243`

5. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_8.pg**

Find the length of the curve

$$y = \frac{x^2}{2} - \frac{\ln(x)}{4}, \quad 2 \le x \le 4.$$

Arc length = _____

Correct Answers:

- `6+ln(2)/4`

6. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_10.pg**

Find the length of the curve

$$y = \ln(\cos(x)), \quad 0 \le x \le \pi/3.$$

Arc length = _____

Correct Answers:

- `ln(2+3^(1/2))`

7. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_12.pg**

Find the length of the curve

$$y = \ln(x), \quad 1 \le x \le \sqrt{3}.$$

Arc length = _____

Correct Answers:

- `2-sqrt(2)+ln(sqrt(2)+1)-1/2*ln(3)`

8. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_13.pg**

Find the length of the curve

$$y = \cosh(x), \quad 0 \le x \le 1.$$

Arc length = _____

Correct Answers:

- `1/2*(exp(1)-1/exp(1))`

9. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_15.pg**

Find the length of the curve

$$y = e^x, \quad 0 \le x \le 1.$$

Arc length = _____

Correct Answers:

- `sqrt(1+exp(2))-sqrt(2)+ln(sqrt(1+exp(2))-1)-1-ln(sqrt(2)-1`

10. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_17.pg**

Which of the following integrals represents the length of the curve $y = \cos(x), \ 0 \le x \le 2\pi$?

- A. $\int_0^{2\pi} \sqrt{1 + \cos^2(x)}\, dx$
- B. $\int_0^{2\pi} \sqrt{1 + \sin^2(x)}\, dx$
- C. $\int_0^{2\pi} \sqrt{1 - \sin^2(x)}\, dx$
- D. $\int_0^{2\pi} \sqrt{1 + \sin(x)}\, dx$
- E. $\int_0^{2\pi} \sqrt{1 + \cos(x)}\, dx$
- F. $\int_0^{2\pi} \sqrt{1 + \cos^2(x)}\, dx$

Correct Answers:

- B

---

11. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_18.pg**

Which of the following integrals represents the length of the curve $y = 2^x,\ 0 \le x \le 3$?

- A. $\int_0^3 \sqrt{1+2^{2x}}\,dx$
- B. $\int_0^3 \sqrt{1+2(\ln 2)^2 2^{2x}}\,dx$
- C. $\int_0^3 \sqrt{1+(\ln 2)^2 2^{2x}}\,dx$
- D. $\int_0^3 \sqrt{1+2^x}\,dx$
- E. $\int_0^3 \sqrt{1+(\ln 2)^2 2^2}\,dx$
- F. $\int_0^3 \sqrt{1+(\ln 2)^2 2^x}\,dx$

Correct Answers:

- C

---

12. **(1 pt) Library/UCSB/Stewart5_8_1/Stewart5_8_1_20.pg**

Which of the following integrals represents the length of the curve $\frac{x^2}{25}+\frac{y^2}{36}=1$?

- A. $\int_{-6}^{6}\left(1+\frac{36x^2}{25(5-x^2)}\right)^{1/2}dx$
- B. $\int_{-5}^{5}\left(1+\frac{36x^2}{25(25-x^2)}\right)^{1/2}dx$
- C. $\int_{-5}^{5}\left(1+\frac{36x^2}{25(5-x^2)}\right)^{1/2}dx$
- D. $\int_{-6}^{6}\left(1+\frac{36x^2}{6(5-x^2)}\right)^{1/2}dx$
- E. $\int_{-6}^{6}\left(1+\frac{36x^2}{25(25-x^2)}\right)^{1/2}dx$
- F. $\int_{-5}^{5}\left(1+\frac{36x^2}{6(5-x^2)}\right)^{1/2}dx$

Correct Answers:

- B

1. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_1.pg**

Which of the following integrals represents the area of the surface obtained by rotating the curve $y = \ln(x),\ \ 1 \le x \le 3$, about the x-axis?

- A. $2\pi \int_1^3 x\sqrt{1+(1/x)^2}\,dx$
- B. $2\pi \int_1^3 x\sqrt{1+(1/x)^2}\,dx$
- C. $2\pi \int_1^3 \ln(x)\sqrt{1-(1/x)^2}\,dx$
- D. $2\pi \int_1^3 x\sqrt{1+(1/x)^2}\,dx$
- E. $2\pi \int_1^3 \ln(x)\sqrt{1+(1/x)}\,dx$
- F. $2\pi \int_1^3 \ln(x)\sqrt{1+(1/x)^2}\,dx$

Correct Answers:

- F

2. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_2.pg**

Which of the following integrals represents the area of the surface obtained by rotating the curve $y = \sin^2(x),\ \ 0 \le x \le \pi/2$, about the x-axis?

- A. $2\pi \int_0^{\pi/2} \sin^2(x)\sqrt{1+(2\sin(x)\cos(x))^2}\,dx$
- B. $2\pi \int_0^{\pi/2} \sin^2(x)\sqrt{1+(2\sin(x))^2}\,dx$
- C. $2\pi \int_0^{\pi/2} x\sqrt{1+2\sin(x)\cos(x)}\,dx$
- D. $2\pi \int_0^{\pi/2} x\sqrt{1+(2\sin(x)\cos(x))^2}\,dx$
- E. $2\pi \int_0^{\pi/2} x\sqrt{1+(\sin(x)\cos(x))^2}\,dx$
- F. $2\pi \int_0^{\pi/2} \sin^2(x)\sqrt{1+(\sin(x)\cos(x))^2}\,dx$

Correct Answers:

- A

3. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_3.pg**

Which of the following integrals represents the area of the surface obtained by rotating the curve $y = \sec(x),\ \ 0 \le x \le \pi/4$, about the y-axis?

- A. $2\pi \int_0^{\pi/4} \sec(x)\sqrt{1+(\sec(x)\tan(x))^2}\,dx$
- B. $2\pi \int_0^{\pi/4} x\sqrt{1+(2\sec(x)\tan(x))^2}\,dx$
- C. $2\pi \int_0^{\pi/4} \sec(x)\sqrt{1+(\tan^2(x))^2}\,dx$
- D. $2\pi \int_0^{\pi/4} \sec(x)\sqrt{1+(2\sec(x)\tan(x))^2}\,dx$
- E. $2\pi \int_0^{\pi/4} x\sqrt{1+(\sec(x)\tan(x))^2}\,dx$
- F. $2\pi \int_0^{\pi/4} x\sqrt{1+(\tan^2(x))^2}\,dx$

Correct Answers:

- E

4. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_4.pg**

Which of the following integrals represents the area of the surface obtained by rotating the curve $y = e^x,\ \ 1 \le y \le 2$, about the y-axis?

- A. $2\pi \int_1^2 \ln(y)\sqrt{1+(1/y)}\,dy$
- B. $2\pi \int_1^2 e^y\sqrt{1+(1/y)}\,dy$
- C. $2\pi \int_1^2 e^y\sqrt{1+(1/y)^2}\,dy$
- D. $2\pi \int_1^2 y\sqrt{1+(1/y)}\,dy$
- E. $2\pi \int_1^2 y\sqrt{1+(1/y)^2}\,dy$
- F. $2\pi \int_1^2 \ln(y)\sqrt{1+(1/y)^2}\,dy$

Correct Answers:

- F

5. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_6.pg**

Find the area of the surface obtained by rotating the curve $9x = y^2 + 18,\ 2 \le x \le 6$, about the x-axis.

Area = _____

Correct Answers:

- 49*pi

6. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_7.pg**

Find the area of the surface obtained by rotating the curve $y = \sqrt{x},\ 4 \le x \le 9$, about the x-axis.

Area = _____

Correct Answers:

- pi/6*(37*sqrt(37)-17*sqrt(17))

7. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_8.pg**

Find the area of the surface obtained by rotating the curve $y = \cos(2x),\ 0 \le x \le \pi/6$, about the x-axis.

Area = _____

Correct Answers:

- `pi*(sqrt(3)/2+1/4*ln(2+sqrt(3)))`

8. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_9.pg**

Find the area of the surface obtained by rotating the curve $y = \cosh(x),\ 0 \le x \le 1$, about the x-axis.

Area = _____

Correct Answers:

- `pi*(1+1/2*sinh(2))`

9. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_10.pg**

Find the area of the surface obtained by rotating the curve $y = \dfrac{x^3}{6} + \dfrac{1}{2x},\ \dfrac{1}{2} \le x \le 1$, about the x-axis.

Area = _____

Correct Answers:

- `263/256*pi`

10. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_12.pg**

Find the area of the surface obtained by rotating the curve $x = 1 + 2y^2,\ 1 \le y \le 2$, about the x-axis.

Area = _____

Correct Answers:

- `pi/24*(65*sqrt(65)-17*sqrt(17))`

11. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_14.pg**

Find the area of the surface obtained by rotating the curve $y = 1 - x^2,\ 0 \le x \le 1$, about the y-axis.

Area = _____

Correct Answers:

- `pi/6*(5*sqrt(5)-1)`

12. **(1 pt) Library/UCSB/Stewart5_8_2/Stewart5_8_2_16.pg**

Find the area of the surface obtained by rotating the curve $x = a\cosh(y/a),\ -a \le y \le a$, about the y-axis.

Area = _____

Correct Answers:

- `2*pi*a^2*(1+1/2*sinh(2))`