

Student: _____
Date: _____

Instructor: Pangyen Weng
Course: Calculus II

Assignment: 1.7 Substitution and Area Between Curves

1. Use the Substitution Formula to evaluate the integrals.

$$(a) \int_0^2 t^3 (4+t^4)^3 dt$$

$$(b) \int_{-2}^2 t^3 (4+t^4)^3 dt$$

$$(a) \int_0^2 t^3 (4+t^4)^3 dt = \boxed{} \text{ (Simplify your answer.)}$$

$$(b) \int_{-2}^2 t^3 (4+t^4)^3 dt = \boxed{} \text{ (Simplify your answer.)}$$

2. Use the substitution formula to evaluate the integral.

$$\int_0^{\sqrt{3}} \frac{8x}{\sqrt{x^2+1}} dx$$

$$\int_0^{\sqrt{3}} \frac{8x}{\sqrt{x^2+1}} dx = \boxed{} \text{ (Simplify your answer.)}$$

- 3.

Use the substitution formula to evaluate the integrals $\int_0^{\pi/4} (1 - \cos 2t) \sin 2t dt$ and $\int_{\pi/4}^{\pi/2} (1 - \cos 2t) \sin 2t dt$.

$$\int_0^{\pi/4} (1 - \cos 2t) \sin 2t dt = \boxed{}$$

(Simplify your answer.)

$$\int_{\pi/4}^{\pi/2} (1 - \cos 2t) \sin 2t dt = \boxed{}$$

(Simplify your answer.)

4. Evaluate the integral.

$$\int_1^2 \frac{4(\ln x)^3}{x} dx$$

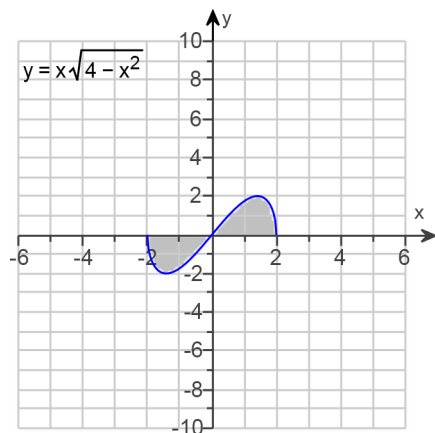
$$\int_1^2 \frac{4(\ln x)^3}{x} dx = \boxed{} \text{ (Type an exact answer.)}$$

5. Evaluate the integral $\int_0^{9\sqrt{3}} \frac{13 \, ds}{\sqrt{324 - s^2}}$.

$$\int_0^{9\sqrt{3}} \frac{13 \, ds}{\sqrt{324 - s^2}} = \boxed{}$$

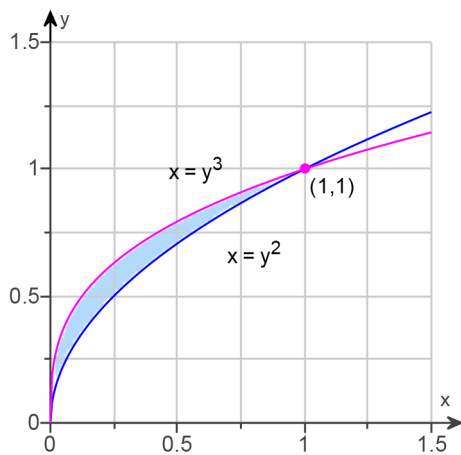
(Type an exact answer, using π as needed.)

6. Find the total area of the shaded regions.



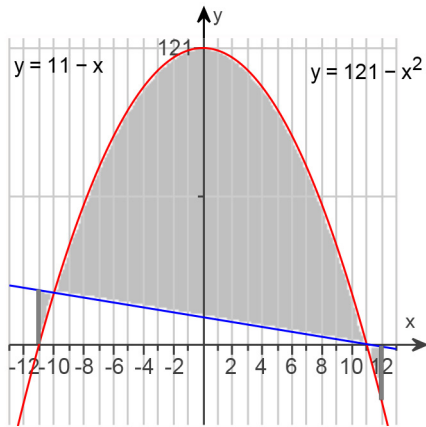
The total area of the shaded regions is .
(Simplify your answer.)

7. Find the total area of the shaded region.



The area is .

8. Find the total area of the shaded regions.



The total area of the shaded regions is .
(Simplify your answer.)

1. 9984

0

2. 8

3. $\frac{1}{4}$

$\frac{3}{4}$

4. $(\ln 2)^4$

5. $\frac{13\pi}{3}$

6. $\frac{16}{3}$

7. $\frac{1}{12}$

8. $\frac{9391}{6}$