Student: ____________________	**Instructor:** Pangyen Weng	**Assignment:** 1.5 The Fundamental Theorem of Calculus
Date: ____________________	**Course:** Calculus II	

1. Evaluate the definite integral.

$$\int_0^4 \left(5x^2 - 6x + 8\right) dx$$

$$\int_0^4 \left(5x^2 - 6x + 8\right) dx = \boxed{}$$

(Simplify your answer.)

2. Evaluate the following integral.

$$\int_0^{\pi/8} \sin 2x \, dx$$

$$\int_0^{\pi/8} \sin 2x \, dx = \boxed{}$$

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

3. Evaluate the integral $\int_1^{-1} (3r + 2)^2 dr$.

The value of the integral $\int_1^{-1} (3r + 2)^2 dr$ is $\boxed{}$.

(Simplify your answer.)

4. Evaluate the integral.

$$\int_2^3 x^{\pi - 1} \, dx$$

$$\int_2^3 x^{\pi - 1} \, dx = \boxed{}$$

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

5. Find $\frac{dy}{dw}$ for $y = \int_0^w \sqrt{4 + 5t^2} \, dt$.

The derivative $\frac{dy}{dw}$ for $y = \int_0^w \sqrt{4 + 5t^2} \, dt$ is $\boxed{}$.

6. Find $\frac{dy}{dx}$.

$$y = \int_{\sqrt[3]{x}}^{\pi/4} \sin\left(t^3\right) dt$$

$\frac{dy}{dx}$ = ______

7. Find $\frac{dy}{dx}$ for $y = \int_0^{e^{x^2}} \frac{5}{\sqrt{t}}\, dt$.

$\frac{dy}{dx}$ = ______

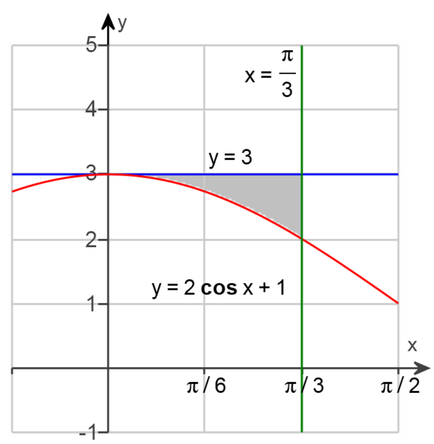
8. Find the total area of the region between the x-axis and the graph of $y = -x^2 - 3x, \ -5 \le x \le 1$.

The total area of the region between the x-axis and the graph of $y = -x^2 - 3x, \ -5 \le x \le 1$ is ______.
(Simplify your answer.)

9. Find the total area of the region between the x-axis and the graph of $y = x^{1/3} - x, \ -1 \le x \le 8$.

The total area of the region between the x-axis and the graph of the given function is ______.
(Type an integer or a decimal. Round to two decimal places as needed.)

10. Find the shaded region in the graph.



What is the area of the shaded region?

______

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression. Type an exact answer in terms of π.)

1. $\frac{272}{3}$

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2. $\frac{2-\sqrt{2}}{4}$

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3. -14

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4. $\frac{1}{\pi}\left(3^{\pi}-2^{\pi}\right)$

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5. $\sqrt{4+5w^2}$

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6. $-\frac{1}{3}x^{-2/3}\,\mathbf{sin}\,x$

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7. $10x\,e^{(1/2)x^2}$

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8. 15

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9. 20.75

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10. $\frac{2\pi}{3}-\sqrt{3}$
