Ch. 25 - Board Problems

① Find the area in the 2nd quadrant bounded by $y = 4 - x^2$.

② Find all values of x where $y = x^3 + 3x^2 - 4x$ is equal to zero.

③ Find the area between $y = x^3 + 3x^2 - 4x$ and the x-axis.

Ch. 25 - Definite Integrals

Ex 1

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} 5\sin^4(3x)\cdot\cos(3x)\,dx$$

$u =$

$\frac{du}{dy} =$

$du =$

Ex 2

$$\int_1^4 \frac{dy}{3\sqrt{y}\,(1+\sqrt{y})^3}$$

$u =$ $\frac{du}{dy} =$ $du =$

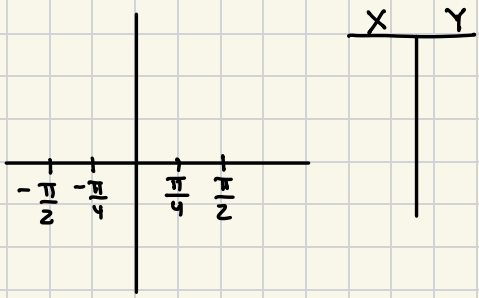
Ex 3

$$\int_0^1 e^{3x}\,dx$$

Ex. 4

$$\int_1^e \frac{dx}{x} =$$

Ex. 5 Find the area between one positive arc of $y = 2\cos(x)$ and the x-axis.



$$\int 2\cos x \, dx =$$

Ex. 6 $\int_{-\frac{\pi}{8}}^{0} \tan(2\theta)\, d\theta =$

Ex. 7 $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{\cos(x)+\sin(x)}{\sin(x)}\, dx =$

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Evaluate the definite integrals.

1. $\int_0^4 x\sqrt{25-x^2}\ dx$

2. $\int_0^2 x\, e^{-\frac{x^2}{2}}\ dx$

3. $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \sin^2(\theta)\ \cos(\theta)\ d\theta$

4. $\int_{-\frac{\pi}{4}}^{0} \tan(x)\sec^2(x)\,dx$

5. $\int_{-\sqrt{2}}^{\sqrt{2}} \frac{x}{\sqrt{x^2+1}}\,dx$

6. Find the area of one arch of the curve $y = 3\sin(2x)$. Include a sketch.