Lower 6 Chapter 13

Integration

Course Structure

1. Find $y$ given $\frac{dy}{dx}$
2. Evaluate definite integrals, and hence the area under a curve.
3. Find areas bound between two different lines.





Integrating $x^{n}$ terms

Integration is the **opposite of differentiation.**

Consider:

If $\frac{dy}{dx}=3x^{2}$, what could $f(x)$?

Examples

Find $y$ when:

1. $\frac{dy}{dx}=4x^{3}      2. \frac{dy}{dx}=x^{5}           $

$$   $$

$3. \frac{dy}{dx}=3x^{\frac{1}{2}}           $ 4. $\frac{dy}{dx}=\frac{4}{\sqrt{x}}$

$5. \frac{dy}{dx}=5x^{-2}                    $ 6. $\frac{dy}{dx}=4x^{\frac{2}{3}}                      $

7. $\frac{dy}{dx}=10x^{-\frac{2}{7}}                 $

Test Your Understanding

Find $f(x)$ when:

$f^{'}\left(x\right)=2x+7                         $ $f^{'}\left(x\right)=x^{2}-1          $

$f^{'}\left(x\right)=\frac{2}{x^{7}}               $ $f^{'}\left(x\right)=\sqrt[3]{x}=$

$f^{'}\left(x\right)=33x^{\frac{5}{6}}                              $

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