

Methods Lesson 4

3. **WE5** Evaluate the following definite integrals.

a. $\int_0^{\frac{\pi}{2}} \sin(x) dx$

b. $\int_{\frac{\pi}{2}}^{\pi} 3 \sin(4x) dx$

c. $\int_0^{\pi} 5 \sin\left(\frac{x}{4}\right) dx$

7. **WE6** Given that $\int_2^5 m(x) dx = 7$ and $\int_2^5 n(x) dx = 3$, calculate:

a. $\int_2^5 3m(x) dx$

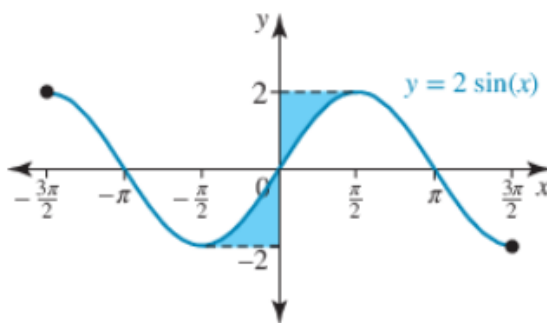
b. $\int_2^5 (2m(x) - 1) dx$

5. Evaluate the following.

a. $\int_0^3 (3x^2 - 2x + 3) dx$

b. $\int_1^2 \frac{2x^3 + 3x^2}{x} dx$

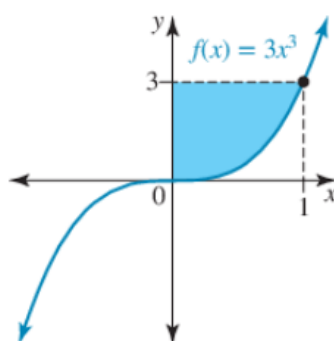
20. The graph of $y = 2 \sin(x)$, $-\frac{3\pi}{2} \leq x \leq \frac{3\pi}{2}$ is shown.



a. Calculate $\int_0^{\frac{\pi}{2}} 2 \sin(x) dx$.

- b. Hence, or otherwise, calculate the area of the shaded region.

19. The graph of $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = 3x^3$ is shown.



- a. Calculate the area bounded by the curve and the x -axis from $x = 0$ to $x = 1$.
 - b. Hence, or otherwise, calculate the area of the shaded region.
5. **WE9** Consider the function $y = (x^2 - 1)(x^2 - 9)$.
- a. Sketch the graph of the function, stating all axis intercepts.
 - b. Determine the area enclosed by the function, the lines $x = -3$ and $x = 3$, and the x -axis.

Find the Area

