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Outcome 1

1. (i) Show that (x - 3) is a factor of $f(x) = x^3 - x^2 - 14x + 24$.

(ii) Hence factorise f(x) fully.

2 Determine the nature of the roots of the equation $2x^2 + x - 2 = 0$ using the discriminant.

Outcome 2

3 Find $\int \frac{3}{x^4} dx$

4 The curve with equation $y = x^2 (3 - x)$ is shown in Diagram 1.

Calculate the shaded area shown in Diagram 1.



5 The line with equation y = x + 6 and the curve with equation $y = x^2 - 5x + 6$ are shown in Diagram 2.

> The line and curve meet at the points where x = 0and x = 6.

Calculate the shaded area shown in Diagram 2.



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Outcome 3

- 6 Solve the equation $4\sin 2x = 2$ for $0 \le x \le \pi$.
- 7 Diagram 3 shows two right-angled triangles.

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End of assessment