

17

(a)

$$(\sin x - \cos x)^2$$

$$= \sin^2 x - 2\sin x \cos x + \cos^2 x$$

$$= \sin^2 x + \cos^2 x - 2\sin x \cos x$$

$$= 1 - \sin 2x$$

$$(b) \int (\sin x - \cos x)^2 dx$$

$$= \int (1 - \sin 2x) dx$$

$$= x + \frac{1}{2} \cos 2x + C$$

Question			Generic scheme	Illustrative scheme	Max mark
17.	(a)		•¹ expand brackets •² use double angle formula for sin •³ use trigonometric identity and express in required form	•¹ $\sin^2 x - \sin x \cos x$ $-\sin x \cos x + \cos^2 x$ •² $\dots - \sin 2x \dots$ •³ $1 - \sin 2x$	3
Notes:					
1. For correct answer with no working award 0/3.					
Commonly Observed Responses:					
Candidate A - incorrect notation					
$\sin x^2 - 2 \sin x \cos x + \cos x^2$ $1 - \sin 2x$			•¹ ✗ •² ✓ •³ ✗		
	(b)		•⁴ link to (a) and integrate one term •⁵ complete integration	•⁴ eg $\int (1 - \sin 2x) dx = x \dots$ •⁵ $x + \frac{1}{2} \cos 2x + c$	2
Notes:					
2. • ⁴ and • ⁵ can only be awarded if the integrand is of the form $p + q \sin rx$.					
3. Where the statement for • ³ appears with no relevant working, • ⁴ and • ⁵ are not available.					
Commonly Observed Responses:					

[END OF MARKING INSTRUCTIONS]