

Mixed SSM 1 ms

0 min
0 marks

1. (a) 8 M1,A1
M1 for 12/1.5
A1 answer
- (b) 40 B1 [3]
2. 8 M1,A1
M1 for 12/1.5
A1 answer [2]
3. (a) $\sqrt{18}$ M1,A1cao
M1 for $AB^2 = 3^2 + 3^2$
A1 for answer
- (b) $y = x+2$ M1,A1,A1ft
M1 for Attempt to find gradient
A1 for Gradient = $\frac{3}{3} = 1$
Ft their gradient but must be + 2. [5]

4. (a) (i) $x = 104^\circ$ B1
- (ii) $y = 128^\circ$ B1
- (b) 115° M1,A1
M1 for sight of R or Q = 90
A1 for $360 - 90 - 90 - 65$
- [4]
5. $\pi \times 2^2 \times 1.5$ or 6π M1
- $\frac{1}{3} \pi \times 2^2 \times 0.9$ or 1.2π M1
- 7.2π A1
- [3]
6. (a) $a^2 + 2a\sqrt{6} + 6$ B2
- 1 eeo but must have middle terms at some stage.
- (b) 4 with convincing explanation M1,A1,M1,A1,A1
M1 for $(a + \sqrt{6})^2 + (a - \sqrt{6})^2$
A1 for $2a^2 + 12$
M1 for $(a + \sqrt{6})^2 + (a - \sqrt{6})^2 = (2\sqrt{11})^2$
a1 for $2a^2 = 44$
A1 answer
- [7]
7. (a) $\frac{1}{3} ((4\mathbf{a} - 5\mathbf{b}) + (5\mathbf{a} - \mathbf{b}))$ M1
- $(-4\mathbf{a} + 5\mathbf{b}) + \text{their } (3\mathbf{a} - 2\mathbf{b})$ M1 dep
- $-\mathbf{a} + 3\mathbf{b}$ A1
or $3\mathbf{a} - 2\mathbf{b}$
- (b) $(-4\mathbf{a} + 5\mathbf{b}) + (\mathbf{a} + 4\mathbf{b})$ M1
- $-3\mathbf{a} + 9\mathbf{b}$ A1

(c) *ORS* is a straight line B1
oe

OS is 3 times the length of *OR* B1
oe

[7]

8. Angle *APB* = 90 B1
or angle APB = 90

Angle *PBA* = 90 – *x* B1
or angle PBT = 90 + x

Angle *TBP* = *x* B1
or angle TBP = x

$x + y = 90 - x$ B1dep
or x + y + 90 + x = 180
for B4 must see logical progression from x to y

[4]

9. (a) No, supported by working M1,DM1,A1,B1
M1 for sight of sine

$$DM1 \text{ for } \sin x = \frac{0.29}{4} (= 0.0725)$$

$$A1 \text{ for } x = 4.157 \text{ or } \sin 4 < 0.0725$$

B1 conclusion

(b) (i) 174,170 M1,DM1,A1,B1
M1 for sight of tan.

$$DM1 \text{ for } h = 50 \times \tan 74$$

$$A1 \text{ for } 174.37$$

*B1 for rounding. NB independent mark
f.t. their answer if > 3 s.f*

Accept 175 if supporting working seen

(ii) 74° B1

[9]

10. Triangle with vertices at
(3, -4), (2,- 5.5) and (0,5)

Two vertices correct
B1

B2

[2]