

Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 A – The centre signs follow x-h,y-k and radius is $\sqrt{9}$. B reverses both centre signs and uses radius squared; C gets the centre right but retains the squared radius.

Correct response linked to the given case.

2.2 A – $r\theta=4 \cdot \pi/2=2\pi$. B fails to halve 4π ; C divides the angle by radius rather than multiplying.

Correct response linked to the given case.

2.3 π – A half-turn is π radians.

Correct response linked to the given case.

2.4 True – The tangent-radius perpendicular theorem applies at the contact point.

Correct response linked to the given case.

3.1 Complete squares to get $(x-4)^2 + (y+1)^2 = 9$. Centre $(4, -1)$, radius 3. Substitution of $(7, -1)$ gives $3^2 + 0^2 = 9$, so it is on the circle.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence
. Accurate conditions, checks or qualification.

3.2 $\theta = 135\pi/180 = 3\pi/4$ radians. $s = r\theta = (8\text{ cm})(3\pi/4) = 6\pi\text{ cm}$. $A = r^2\theta/2 = (8\text{ cm})^2(3\pi/4)/2 = 24\pi\text{ cm}^2$. The inscribed angle is half the central angle: 67.5 degrees.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.

3.3 $x^2 + y^2 = 1$ gives $x^2 = 3/4$. Quadrant III requires $x < 0$, so $x = -\sqrt{3}/2$. The point is at 210 degrees, with reference angle 30 degrees.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence.
Accurate conditions, checks or qualification.