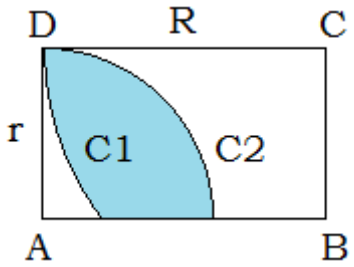
Princess Vulnavia presents … Cloud 9; Revision Raindrops

Area of a Sector

Raindrop 7b



(i) The diagram shows the rectangle ABCD, the arc C1 of a circle centre C, radius R, and the arc C2 of a circle centre A, radius r.

Find the area of the shaded region in terms of R and r.

(ii) Given that $r = \sqrt{3}$ and $R = 2$, find the area of the shaded region.

The answers follow on the next page …

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(i) Answer

The shaded area $= \frac{1}{4}\pi r^2 + \frac{\pi R^2}{360}\sin^{-1}\left(\frac{r}{R}\right) + \frac{r}{2}\sqrt{(R^2 - r^2)} - Rr$

(ii) Answer: The area of the shaded region

$= \frac{1}{12}(17\pi - 18\sqrt{3})$