

12th May



Write as a power of 3

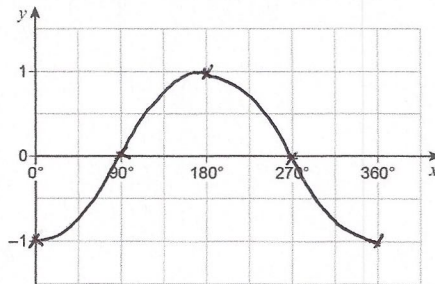
$$\sqrt[3]{9} \quad (3^2)^{\frac{1}{3}}$$

$$3^{\frac{2}{3}}$$

$f(x) = x - 180$   
 $g(x) = \cos x$

Draw  $y = gf(x)$

$$y = (\cos(x - 180))$$

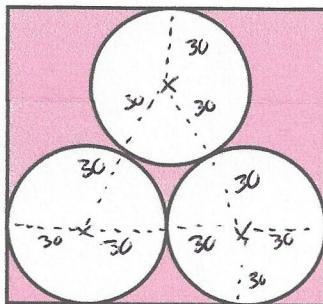


Simplify fully

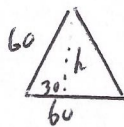
$$\frac{3\cos(45^\circ) - \sin(45^\circ)}{\tan(30^\circ)}$$

$$\frac{3\left(\frac{\sqrt{2}}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)}{\left(\frac{\sqrt{3}}{3}\right)} = \frac{2\sqrt{2}}{\frac{\sqrt{3}}{3}} = \frac{\sqrt{2}}{\left(\frac{\sqrt{3}}{3}\right)}$$

$$\sqrt{2} \div \frac{\sqrt{3}}{3} = \sqrt{2} \times \frac{3}{\sqrt{3}} = \frac{3\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$$



120cm



$$60^2 - 30^2 = 2700$$

$$\sqrt{2700} = 51.9615$$

Find the shaded area.

$$= \frac{3\sqrt{6}}{3} = \sqrt{6}$$

rectangle:

length 120cm

width 111.9615

$$\text{Area} = 13435.3821$$

$$\text{Circle } \pi \times 30^2 = 2827.43\dots$$

$$2827.43\dots \times 3 = 8482.3$$

$$13435.38\dots - 8482.3\dots$$

$$4953.08\text{cm}^2$$

Shown above are three congruent circles. Each circle touches the other two circles and the sides of the rectangle.

The radius of each circle is 30cm.