1st January **Higher Plus 5-a-day**

Corbettmaths

Prove $(2n+2)^2 - (2n+1)$ is always odd for all positive values of n.

$(2n+2)(2n+2) - (2n+1)$

$= 4n^2 + 8n + 4 - 2n - 1$

$= 4n^2 + 6n + 3$

$= 4n^2 + 6n + 2 + 1$

$2(2n^2 + 3n + 1) + 1$

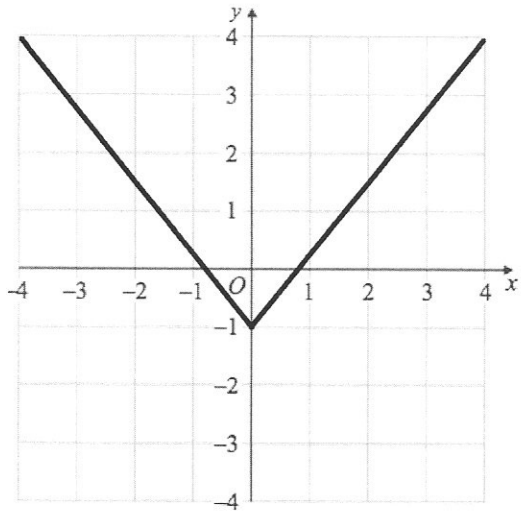
even + 1 = odd

Rationalise the denominator

$$\frac{3+\sqrt{2}}{\sqrt{3}} \quad \times\sqrt{3} \quad = \quad \frac{3\sqrt{3}+\sqrt{6}}{3}$$

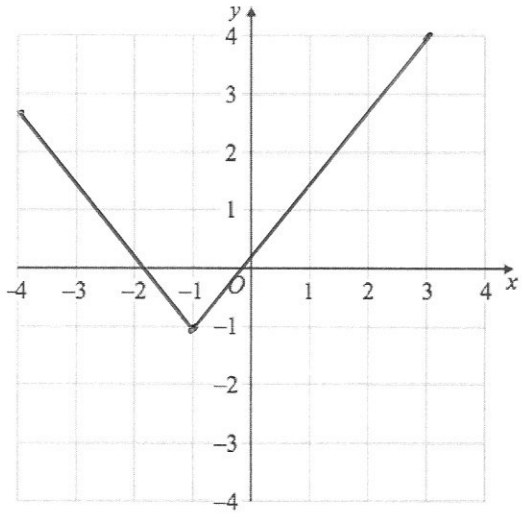
$$\sqrt{3} + \frac{\sqrt{6}}{3}$$

Shown is f(x)



Sketch the function f(x + 1)

left



f(x) = 3x + 2

g(x) = x^2

Find fg(x)

$g(x) = x^2$

$f(x^2)$

$= 3x^2 + 2$

Find gf(5)

$f(5) = 17$

$g(17) = 289$