9th May

Corbettmaths

$f(x) = \left(\frac{7x}{4}\right)^{-1}$ $f(x) = \frac{4}{7x}$

$g(x) = \frac{3x-2}{7}$

Solve $g^{-1}(x) = f(x)$

Give your answers to 2 decimal places

$y = \frac{3x-2}{7}$ $x = \frac{7y+2}{3}$

$7y = 3x - 2$

$7y + 2 = 3x$ $g^{-1}(x) = \frac{7x+2}{3}$

$\frac{4}{7x} = \frac{7x+2}{3}$

$49x^2 + 14x = 12$

$49x^2 + 14x - 12 = 0$

$a = 49$ $b = 14$ $c = -12$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = -0.658$

or $x = 0.372$

$\mathbf{A} = \begin{pmatrix} 9 & -1 \\ 3 & 4 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} 3 & 1 \\ -2 & 5 \end{pmatrix}$

Work out the matrix **BA**

$\begin{pmatrix} 3 & 1 \\ -2 & 5 \end{pmatrix}\begin{pmatrix} 9 & -1 \\ 3 & 4 \end{pmatrix}$

$\begin{pmatrix} 27+3 & -3+4 \\ -18+15 & 2+20 \end{pmatrix}$

$\begin{pmatrix} 30 & 1 \\ -3 & 22 \end{pmatrix}$

Work out the gradient of the curve $y = (x-2)(x+1)^2$ at the point (2, 0)

$y = (x-2)(x^2+2x+1)$

$y = x^3 + 2x^2 + x - 2x^2 - 4x - 2$

$y = x^3 - 3x - 2$

$\frac{dy}{dx} = 3x^2 - 3$

$x = 2$ $\frac{dy}{dx} = 9$

$\boxed{9}$

Show that

$\cos^2\theta + (1+\sin\theta)^2 \equiv 2(\sin\theta + 1)$

LHS

$\cos^2\theta + 1 + 2\sin\theta + \sin^2\theta$

$\cos^2\theta + \sin^2\theta + 1 + 2\sin\theta$

$1 + 1 + 2\sin\theta$

$2 + 2\sin\theta$

$2(1 + \sin\theta)$

$2(\sin\theta + 1)$ QED