Find an equation of the line tangent to the following curves at the given value of x.

73. $y = 1 + 2\sin x;\ x = \dfrac{\pi}{6}$

Steps

1) find $f'(x)$

2) find $f'\left(\frac{\pi}{6}\right) \to m_{tan}\Big|_{x=\frac{\pi}{6}}$

3) set up eq. use $\left(\frac{\pi}{6}, f\left(\frac{\pi}{6}\right)\right)$

Steps

1) $f'(x) = 2\cdot\cos x$

2) $f'\left(\frac{\pi}{6}\right) = 2\cdot\cos\frac{\pi}{6} = 2\cdot\frac{\sqrt{3}}{2} = \sqrt{3} = m_{tan}\Big|_{x=\frac{\pi}{6}}$

$x = \frac{\pi}{6},\ f\left(\frac{\pi}{6}\right) = 1+2\cdot\sin\frac{\pi}{6} = 1+2\cdot\frac{1}{2} = 2$ $\left(\frac{\pi}{6}, 2\right)$

3) $y - 2 = \sqrt{3}\cdot\left(x - \frac{\pi}{6}\right)$

$y - y_1 = m_{tan}(x - x_1)$