

a Where is the gradient negative? <i>B</i> the sign of a gradient on a curve	b $y = x^2$. Find the average rate of change from $x = -2$ to $x = 2$ <i>0</i> a zero average rate	c $y = 2^x$. Find the average rate of change from $x = 1$ to $x = 4$ <i>$\frac{14}{3}$</i> an average rate on an exponential	d Find the average speed <i>5 m/s</i> an average speed, with units
e Find the tangent's gradient <i>0.5</i> a tangent with a fraction gradient	f Estimate the gradient at P <i>1.5 (1.3 to 1.7)</i> estimating a gradient: draw a tangent	g Find the point on $y = x^2 - 4x$ where the gradient is 0 <i>(2, -4)</i> zero gradient: the turning point	h $y = x^2$. Is the gradient at $x = 3$ more than the average rate from $x = 1$ to 3? <i>yes</i> a tangent compared with a chord
i Find the speed at $t = 20$ in km/h <i>30 km/h</i> a rate with a change of units	j Is acceleration rising or falling? <i>falling</i> a rate that is itself changing	k From $x = 0$ to $x = 2$, which has the greater average rate, $y = x^2$ or $y = 2^x$? <i>$y = x^2$</i> average rates on two curves	l $y = x^2$. The average rate of change from $x = 1$ to $x = k$ is 5. Find k. <i>$k = 4$</i> working back from an average rate

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