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| **Literacy****Gradient, differentiation, calculus, polynomial** | **Research**Research the rivalry between Leibniz and Newton over who first discovered calculus. Write a couple of paragraphs about this. | **Memory**$$ \frac{d x^{n}}{dx}=n x^{n-1}$$ |
| **Skills**1. **Differentiate the following using the standard results.**
	1. $3x^{2}$ **b.** $3x+2x^{2}$ **c.** $3x^{2}+4x+1$
2. **Find the derivative of** $2x^{2}$ **from first principles.**
3. **Find the tangent to the curve** $y=3x^{2}-5x-2 $**at the point** $(1,-4)$**.**
4. **Find the stationary points of the curve** $y=x^{3}+6x^{2}+12x+8$**.**
 | **Stretch**Given that $\sin(\left(x\right)≈x - \frac{x^{3}}{6}+ \frac{x^{5}}{120}) $and $\cos(\left(x\right))≈1- \frac{x^{2}}{2}+ \frac{x^{4}}{24} $.Find the derivatives of $sin⁡(x)$ and $cos⁡(x)$. |

**Differentiation Homework**