 Sketching the anti-derivative

During this activity students will be introduced to a slope field and use it to sketch the anti-derivative given a function. Students may like to use this [Desmos activity](https://www.desmos.com/calculator/p7vd3cdmei) to support their learning.

1. Consider the derivative $f'(x)=\frac{x}{2}$. The anti-derivative of $f'(x)$ is the function $f(x)$.
2. Consider the any point, eg) $(4, 2)$, calculate $f’(x)$ at that point, ie) for $x=4$, ie) $f’(4)=2$
3. This result is interpreted as the gradient at the point $(4, 2)$ and is represented as a line or an arrow at the point $(4, 2)$, as shown below.



1. If steps 2 and 3 are repeated for all points, it will construct the slope field shown below.



1. The slope field shows a family of curves for the anti-derivative. Each curve is a vertical translation of another.

Note: The same technique can be applied to find curves of the anti-derivative of functions $f(x)$.