

The following data describes the motion of a particle:

$$a(t) = 3 \cos(t) - 2 \sin(t); s(0) = 0; v(0) = 4$$

Find the particle's position function $s(t)$.

reset

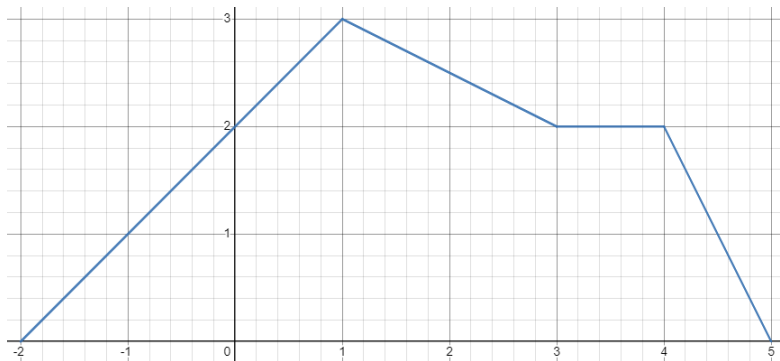
Bellwork 12/12 - Solution

$$\begin{aligned}\int_0^t a(t) dt &\implies v(t) - v(0) = 3 \sin(t) + 2 \cos(t) \\ &\implies v(t) = 3 \sin(t) + 2 \cos(t) + 4\end{aligned}$$

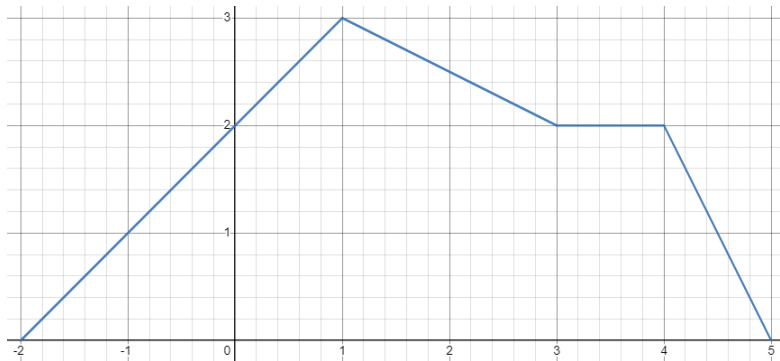
$$\begin{aligned}\int_0^t v(t) dt &\implies s(t) - s(0) = -3 \cos(t) + 2 \sin(t) + 4t \\ &\implies \boxed{s(t) = -3 \cos(t) + 2 \sin(t) + 4t}\end{aligned}$$

Exercise 1

Find the area under the piecewise curve below:



Exercise 1 - Solution



$$2 + 8 + 1 + \frac{3}{2} = \boxed{11 + \frac{3}{2}}$$