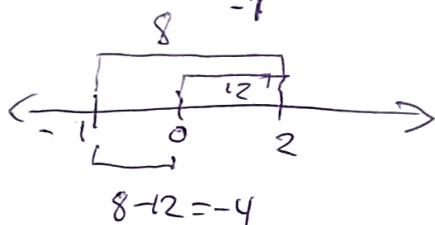


Quiz 12 Solutions

Problem 1 If $\int_{-1}^2 f(x) dx = 8$ and $\int_0^2 f(x) dx = 12$ find

$$\int_{-1}^0 f(x) dx = \int_{-1}^2 f(x) dx - \int_0^2 f(x) dx = 8 - 12 = \boxed{-4}$$



Problem 2 The velocity in meters/min of a particle moving along a straight line is $V(t) = 2t - \frac{1}{2}$. Find t when the displacement is zero.

$$\int_0^x V(t) dt = 0 \quad \leftarrow \text{set}$$

Solve for x .

$$\int_0^x (2t - \frac{1}{2}) dt = t^2 - \frac{1}{2}t \Big|_0^x$$

$$= x^2 - \frac{1}{2}x = 0$$

$$x(x - \frac{1}{2}) = 0$$

so $x = \frac{1}{2}$

so the displacement

is zero when $\boxed{t = \frac{1}{2}}$

Problem 3 Find the area

of the region bounded by

the graphs: $y = 2e^x$, $y = 0$, $x = 2$, $x = 7$

$$\text{Area} = \int_2^7 2e^x dx = 2e^x \Big|_2^7 = \boxed{2(e^7 - e^2)}$$