

$f(x) = 2x^3 + 3x^2 + x$ is divided by $(x + 4)$

If a polynomial $f(x)$ is divided by $(x - a)$,
the remainder is $f(a)$.

$$\Rightarrow (x + 4) = (x - a), \quad \therefore a = -4$$

$$\begin{aligned} f(-4) &= 2(-4)^3 + 3(-4)^2 + (-4) \\ &= -128 + 48 - 4 \\ &= -84 \end{aligned}$$

the remainder is -84