Find the anti-derivative for the following

$$\int x(x+4)^3 dx$$

Find the anti-derivative for the following

$$\int 2x(x-1)^2 dx$$

Find the anti-derivative for the following

$$\int \frac{x}{(x-1)^3} \, dx$$

Find the anti-derivative for the following

$$\int x \sqrt{2x+1} \ dx$$