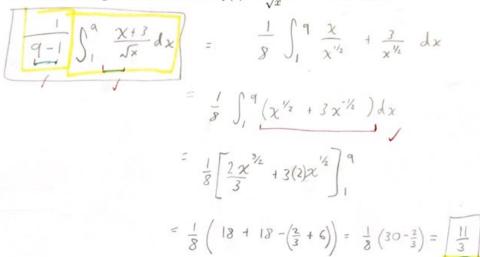
Show all work on this page for full and/or partial credit. Put a box around your final answers in each part.

Find the average value of the function  $f(x) = \frac{x+3}{\sqrt{x}}$  on the interval [1,9].



2. Evaluate the definite integral. You must show the steps of integration by parts.  $\int_{1}^{2} x^{4} \ln(x) dx$ 

3. Find the indefinite integral. You must show the steps of integration by parts.  $\int e^{3x} \sin(4x) dx$ 

- => \frac{9}{9} \int e^{3x} \sin 4x dx = \frac{1}{3} e^{3x} \sin 4x \frac{4}{9} e^{3x} \cos 4x \frac{16}{9} \int e^{3x} \sin 4x dx
- => == \frac{25}{9} \int e^{3x} \sin 4x dx = \frac{1}{3} e^{3x} \sin 4x \frac{4}{9} e^{3x} \cos 4x
- $\Rightarrow \int e^{3x} \sin 4x \, dx = \left[ \frac{9}{25} \left( \frac{e^{3x}}{3} \sin 4x \frac{9}{4} e^{7x} \cos 4x \right) + c \right] = \frac{3e^{3x}}{25} \left( \sin 4x \frac{9}{3} \cos 4x \right) + c$