MA 224 - Quiz 5 Practice Problems

Feel free to work on these with classmates. These are just practice problems to help you guage how comfortable you are with the material—completely optional. The quiz will not be this long.

Note that this doesn't necessarily cover all the topics that the quiz can cover: it is intended to be just a review of a couple key things.

1.
$$\int \sqrt{x}\ln(x)\, \mathrm{d}x$$

2.
$$\int (3+x)e^{3x}\, \mathrm{d}x$$

3.
$$\int_{e}^{e^2} \ln(x^2)\, \mathrm{d}x$$

4.
$$\int (x^2 + 2x + 2)e^x\, \mathrm{d}x$$

Answers

1. $\frac{2}{3}x^{3/2}\left(\ln(x) - \frac{2}{3}\right) + C$

(hint: $\ln(x)$ is hard to integrate, so let $u = \ln(x)$)

2. $\frac{1}{3}e^{3x}\left(\frac{8}{3} + x\right) + C$

3. $2e^2$

(hint: use log properties to rewrite $\ln(x^2) = 2\ln(x)$, then factor the 2 out. We did an example similar to this in class.)

(Wednesday won't involve definite integrals, but they will be on the exam)

4. $(x^2 + 2)e^x + C$