You are on your own with this one. I will provide some hints only. Now that in theory we know how to find more anti derivatives, we can do more application questions. Also included are questions from the secton on using tables and computer algebra systems (wolfram for example).
I would say approximately one sixth of what we teach in 172 can be found in the tables in the back of the book. They still may be useful, but these days integral tables are kind of quaint. On the other hand it would not kill you to be able to recognize forms and learn how to convert. Mostly through the miracle of completing the square. I give this quiz in class:
172 Quiz 5 Name: _____
Using the following integral formulas

$$\int \frac{du}{\sqrt{u^2+a^2}} = \ln(u+\sqrt{u^2+a^2}), \int \frac{du}{\sqrt{a^2-u^2}} = \sin^{-1}(\frac{u}{a}), \int \frac{du}{u^2+a^2} = \frac{1}{a}\tan^{-1}(\frac{u}{a})$$

Compute the following integrals:

1. $\int \frac{dx}{\sqrt{x^2+6x+10}}$

2. $\int \frac{dx}{\sqrt{6x-x^2}}$

3. $\int \frac{dx}{2x^2+6x+5}$

In the real old days the back of math texts used to have log tables, as well as trig tables.

1. Use wolfram. If you are bored, use formula 113 in the table, replacing a by $\frac{1}{2}$

2. I am not sure why I put this question here, but it is from 7.5. Try to do it in your head by the mental u-sub $u = 2 - \sin(x)$

3. Put $u = t^2$ you will get an arctangent. The coefficients will be annoying.

4. Easy parts question, since $\sec(x)\tan(x)$ is the derivative of secant. Then you have to recall the anti derivative of secant.

5. Use shell $V = 2\pi \int_a^b xf(x)dx$. The relevant formula is 31 if you have half an hour to kill.

6. Bored? Use 91

7. A standard area problem that is in this section becaue it requires parts.

8. Another standard area problem, in this section because you need to know

$$\int \ln(x)dx \text{ and } \int x\ln(x)dx$$

   Your real job is to find the limits of integration.

9. Another shells question but since is revolved around the x axis you need

$$2\pi \int_a^b yf(y)dy$$

   which means you have to write as a function of y (trivial) and also figure out the limits of integration. A very easy integral that requires parts. If you enter wolfram's answer I will mark it wrong. This one you have to show your work.

10. $$\frac{1}{2}\int_1^3 x^2 \ln(x)dx$$

    easy parts, show your work.

11. $$\int_9^{16} \frac{\sqrt{x}}{x-4}dx$$

    put $u = \sqrt{x}$ change the limits of integration at this step, then find dx and this will lead to an integral that looks something like

$$\int \frac{u^2}{u^2-4}du$$

12. Discs for the first one

$$\int_a^b (f(x))^2 dx$$

washers for the second

$$2\pi \int_a^b x f(x) dx$$

13. discs

14. Parts the snappy D-I method or wolfram.

15. DIY