MATH 141, FALL 2008

Some more integrals to start with (use trigonometric substitutions):

$$\int \frac{1}{(1-x^2)^{3/2}} \, dx = \frac{x}{\sqrt{1-x^2}} + C$$

$$\int \frac{x^2}{\sqrt{x^2-2}} \, dx = \frac{x}{2} + \ln(|x + \sqrt{x^2-2}|) + C$$

$$\int \sqrt{1-x^2} \, dx = \frac{x}{2}\sqrt{1-x^2} + \frac{1}{2}\arcsin\left(\frac{x}{a}\right) + C$$

$$\int \frac{1}{(x^2+a^2)^{3/2}} \, dx = \frac{x}{a^2\sqrt{a^2+x^2}} + C$$

$$\int \sqrt{\frac{a+x}{a-x}} \, dx = -\sqrt{a^2-x^2} + a\arcsin\left(\frac{x}{a}\right) + C$$

$$\int x\sqrt{\frac{x}{2a-x}} \, dx = -\frac{3a+x}{2} + \sqrt{x(2a-x)} + 3a^2\arcsin\left(\sqrt{\frac{x}{2a}}\right) + C$$

$$\int \frac{1}{\sqrt{(x-a)(x-b)}} \, dx = 2\arcsin\left(\sqrt{\frac{x-a}{b-a}}\right) + C$$

$$\int \sqrt{(x-a)(x-b)} \, dx = \frac{2x-a-b}{4}\sqrt{(x-a)(x-b)} + \frac{(b-a)^2}{4}\arcsin\left(\sqrt{\frac{x-a}{b-a}}\right) + C$$