Formula sheet for Math 152, Exam 2, Spring 2009 for sections 1, 2, 3, 6, 7, 8, & 9

$$\sin(0) = 0;\ \sin\left(\tfrac{\pi}{6}\right) = \tfrac{1}{2};\ \sin\left(\tfrac{\pi}{4}\right) = \tfrac{\sqrt{2}}{2};\ \sin\left(\tfrac{\pi}{3}\right) = \tfrac{\sqrt{3}}{2};\ \sin\left(\tfrac{\pi}{2}\right) = 1$$
$$\cos(0) = 1;\ \cos\left(\tfrac{\pi}{6}\right) = \tfrac{\sqrt{3}}{2};\ \cos\left(\tfrac{\pi}{4}\right) = \tfrac{\sqrt{2}}{2};\ \cos\left(\tfrac{\pi}{3}\right) = \tfrac{1}{2};\ \cos\left(\tfrac{\pi}{2}\right) = 0$$

$$\text{arc length} = \int_a^b \sqrt{1 + [f'(x)]^2}\, dx\ ; \quad \text{surface area} = 2\pi \int_a^b f(x)\sqrt{1 + [f'(x)]^2}\, dx\ .$$

The nth Taylor polynomial of $f(x)$ with center c is $T_n(x) = \displaystyle\sum_{k=0}^{n} \frac{f^{(k)}(c)}{k!}(x-c)^k$.

If $|f^{(n+1)}(u)| \le K$ for all u between c and x, then $|f(x) - T_n(x)| \le K\dfrac{|x-c|^{n+1}}{(n+1)!}$.