	p. 500 #13 $r=-.2x$ Find a formula for the truncation error if we use $P_6(x)$ to approximate $\frac{1}{1+2x}$ on (-.5, .5). $P_6(x) = 1-2x+4x^2-8x^3+16x^4-32x^5+64x^6$ error bound formula $\lvert -128x^7 \rvert \rightarrow \lvert -128(.5)^7 \rvert$
	p. 500 20 a. If cos(x) is replaced by $1-\frac{x^2}{2}$ and $\lvert x\rvert < .5$, what estimate can be made of the error? $-.5 < x < .5$ next term $= \frac{x^4}{4!} \rightarrow \frac{.5^4}{4!}$
$\cos x$ $\cos(0)$ $1-x^2$ $1-0^2$	b. Does $1-\frac{x^2}{2}$ tend to be too large or too small. too small b/c $\frac{x^2}{2}$ is neg and $\cos x$ alternates
$f(x)=(1+x)^{1/2}$ $f'(x)=\frac{1}{2}(1+x)^{-1/2}$ $f''(x)=-\frac{1}{4}(1+x)^{-3/2}$ $\boxed{f''(x)=\frac{-1}{4(1+x)^{3/2}}}$	p. 500 #22 The approximation $\sqrt{1+x} \approx 1+\frac{x}{2}$ is used when x is small. Estimate the error when $\lvert x\rvert < .1$ $-.1 < x < .1$ $\boxed{f''(-.1)}$ $f''(0)=-\frac{1}{4}$ $f''(.1)$ $\left\lvert \frac{\frac{-1}{4(.9)^{3/2}}(.1)^2}{2!} \right\rvert$

$f(x)=(x-2)^{-1}$ $f'(x)=-(x-2)^{-2}$ $f''(x)=2(x-2)^{-3}$ $f'''(x)=-6(x-2)^{-4}$	p. 527 #60 Let $f(x)=\frac{1}{x-2}$ at x = 3. a. Write the first 4 terms and the general term of the Taylor Series generated by f(x) at x = 3. $f(3)=1$ $f'(3)=-1$ $f''(3)=2$ $f'''(3)=-6$ $P_3(x)=1-(x-3)+\frac{2(x-3)^2}{2}-\frac{6(x-3)^3}{3!}$ $\boxed{P_3(x)=1-(x-3)+(x-3)^2-(x-3)^3 \quad \text{General Term } (-1)^n(x-3)^n}$
$f(x)=\ln(x-2) \quad f(3)=0$ $f'=\frac{1}{x-2}=1$	b. Use the result in part (a) to find the fourth order polynomial and the general term of the series generated by $\ln\lvert x-2\rvert$ at x = 3. $\boxed{1(x-3)^1-\frac{1}{2}(x-3)^2}+\frac{1}{3}(x-3)^3-\frac{1}{4}(x-3)^4=\ln\lvert x-2\rvert$ gen: $\frac{(-1)^n(x-3)^{n+1}}{n+1}$ $\frac{1}{2}-\frac{1}{2}\left(\frac{1}{2}\right)^2=.375$ $\frac{1}{3}(.5)^3=.0416$ error $\frac{1}{4}(3.5-3)^4$ .015625
$P_3(3.5)=.401$ $\ln\lvert 1.5\rvert=.405$ $\lvert P_3(x)-\ln(1.5)\rvert=$	c. Use the series in part (b) to compute a number that differs from ln(1.5) by less than 0.05. Justify your answer. $x=3.5 \rightarrow$ alt $x=.5$ use 2 terms Actual error $\frac{1}{5}(x-3)^5 \rightarrow \frac{1}{5}(3.5-3)^5$ error bound .00625 estimate $\ln\left(\frac{3}{2}\right)=.375$??
	83. The Taylor Series for lnx, centered at x = 1, is $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}(x-1)^n}{n}$. Let f be the function given by the sum of the first three nonzero terms of this series. The maximum value of $\lvert \ln x-f(x)\rvert$ for $.3\le x\le 1.7$ is Actual difference $f(x)-P_3(x)$ (A) .030 (B) .039 (C) .145 (D) .153 (E) .529 $P(x)=(x-1)-\frac{(x-1)^2}{2}+\frac{(x-1)^3}{3}$ $\lvert f(.3)-P_3(.3)\rvert=.145$ $\lvert f(1.7)-P_3(1.7)\rvert=.039$