Taylor Polynomials (Section 5) **Version D**
Rensselaer Calculus Skills Practice Page

No calculators will be allowed and no partial credit will be given.

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1. Find the Taylor polynomial of degree 3 for $h(x) = \cos(x)$ centered at $\frac{\pi}{3}$.
2. Find the Taylor polynomial of degree 3 for $g(x) = -2\ln(4\,x)$ centered at $\frac{1}{4}$.
3. Find the Taylor polynomial of degree 2 for $f(x) = 2^{\frac{3}{2}}\sqrt{x}$ centered at $\frac{1}{8}$.
4. Find the Taylor polynomial of degree 3 for $g(x) = \frac{1}{(1-x)^4}$ centered at 0 .
5. Find the Taylor polynomial of degree 4 for $h(x) = 3\ (x-2)^4$ centered at 3 .

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\dfrac{1}{2} - \dfrac{\sqrt{3}\left(x-\frac{\pi}{3}\right)}{2} - \dfrac{\left(x-\frac{\pi}{3}\right)^2}{4} + \dfrac{\sqrt{3}\left(x-\frac{\pi}{3}\right)^3}{12}$
2. $-8\left(x-\dfrac{1}{4}\right) + 16\left(x-\dfrac{1}{4}\right)^2 - \dfrac{128\left(x-\frac{1}{4}\right)^3}{3}$
3. $1 + 4\left(x-\dfrac{1}{8}\right) - 8\left(x-\dfrac{1}{8}\right)^2$
4. $1 + 4\,x + 10\,x^2 + 20\,x^3$
5. $3 + 12\,(x-3) + 18\,(x-3)^2 + 12\,(x-3)^3 + 3\,(x-3)^4$