Name_____ Date_____ Period_____

11.10a

Worksheet . · . —Taylor Polynomials
Show all work. No calculator except unless specifically stated.

Short Answer/Free Response

On problems 1-5, find a Maclaurin polynomial of degree n for each of the following.

1. $f(x) = e^{-x}$, $n = 3$ 　　　　 2. $f(x) = e^{2x}$, $n = 4$ 　　　　 3. $f(x) = \cos x$, $n = 8$

4. $f(x) = xe^{2x}$, $n = 4$ 　　　　 5. $f(x) = \dfrac{1}{x+1}$, $n = 5$

On problems 6-8, find a Taylor polynomial of degree n centered at $x = c$ for each of the following.

6. $f(x) = \dfrac{1}{x}$, $n = 5$, $c = 1$

7. $f(x) = \ln x$, $n = 5$, $c = 1$

8. $f(x) = \sin x$, $n = 6$, $c = \dfrac{\pi}{4}$

9. (Calculator Permitted) Use your answer from problem 1 to approximate $f\left(\dfrac{1}{2}\right)$ to four decimal places.