

Math 181
Fall, 2008

Name _____

Homework #17
Due Monday, November 17
No late papers accepted! No excuses!

1. Find a power series centered at zero for

$$f(x) = \frac{3x-1}{x^2-1}$$

(Hint: use partial fraction decomposition as your first step.)

2. Use the trig identity

$$4 \arctan \frac{1}{5} - \arctan \frac{1}{239} = \frac{\pi}{4}$$

to approximate the number π .

3. Use a power series to approximate

$$\int_0^1 e^{-x^2} dx$$

with an error of less than 0.01.

4. Use power series to find the limit.

$$\lim_{x \rightarrow 0} \frac{7x - \arctan(7x)}{x^3}$$