Math 10a

October 2, 2014

Some Midterm Review

1. Graph $f(x) = \frac{x^2-1}{x^2+1}$.

2. Graph $x^{-3} + 3x^{-2} + 3x^{-1} + 1$

3. Compute

$$\sum_{n=0}^{100} (.5)^n$$

4. Compute

$$\sum_{n=1}^{100} (.5)^n$$

5. Compute

$$\sum_{n=1}^{100} (.6)(.5)^n$$

6. Are

$$\sum_{k=1}^{500} \frac{\pi}{4^k}$$

$$\sum_{m=3}^{502} \frac{2\pi}{2^{2k-2}}$$

the same number?

7. Compute the following infinite limits:

$$1 + x + x^2 + x^3 + \cdots, \ |x| < 1$$

$$\sum_{k=0}^{\infty} (-1)^k x^k, \ |x| < 1$$

$$1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \cdots$$

$$\frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \cdots$$

$$\sum_{k=0}^{\infty} (\sqrt{1+x})^k \text{ for what values of } x \text{ does this converge?}.$$