Name: _____

1. Simplify the expression
$$\tan(\arcsin(\frac{x}{2})).$$

(That is, write an equivalent expression with no trig functions.)

2. Integrate
$$\int \frac{1}{x^2 + 9}\, dx.$$

3. Compute the limit

$$\lim_{x \to 0^+} (\tan 2x)^x$$

4. Integrate: (choose the method carefully)

(a)

$$\int \frac{\ln x}{x} \, dx.$$

(b)

$$\int \frac{\ln x}{x^2} \, dx.$$