

Due date: _____

Name: _____

Tools for Limits (Part 2)

1. Put each list of numbers in order from least to greatest:

$$\frac{4}{30000}, \frac{4}{30000000}, \frac{4}{0.3}, \frac{4}{0.003}, 4$$

$$\frac{30000}{4}, \frac{30000000}{4}, \frac{0.3}{4}, \frac{0.003}{4}, 4$$

2. Answer the following questions.

a) _____ $\leq \sin x \leq$ _____

b) _____ $\leq \cos x \leq$ _____

c) _____ $\leq \tan^{-1} x \leq$ _____

d) Problems a-c above are asking for the _____ of each function.

e) What is the term of $x^4 - 3x^2 + 2x + 5$ with the highest exponent? _____f) What is the term of $6x^2 + 2x^4 - 1$ with the highest exponent? _____g) What is the term of $4x^2 - 3x^{3/2} + 7$ with the highest exponent? _____h) What is the term of $2x^{1/2} + x - 5$ with the highest exponent? _____i) Rewrite $\sqrt[3]{x}$ using rational exponents. _____j) Rewrite $\sqrt[4]{x}$ using rational exponents. _____k) Rewrite $\sqrt[3]{x^2}$ using rational exponents. _____l) Rewrite $\sqrt{x^5}$ using rational exponents. _____

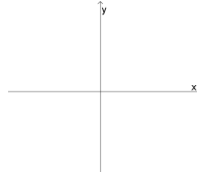
The following type of simplification will be useful in Math 180 soon:

$$\frac{x}{x^{5/2}} = x^{1-\frac{5}{2}} = x^{-3/2} = \frac{1}{x^{3/2}}$$

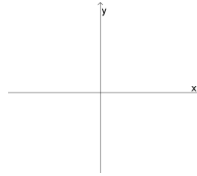
3. Simplify $\frac{x^{2/3}}{x}$ as done above. _____4. Simplify $\frac{\sqrt[3]{x}}{x}$ as done above. _____

5. Write a basic example of each of the following functions, and draw a quick sketch of its graph.

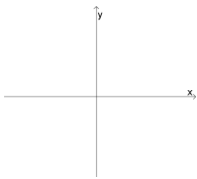
a) Polynomial $f(x) =$



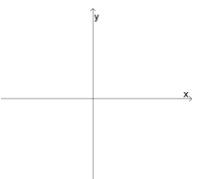
b) Rational $f(x) =$



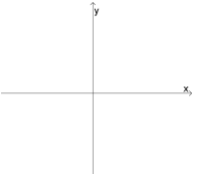
c) Trigonometric $f(x) =$



d) Inverse Trigonometric $f(x) =$



e) Exponential $f(x) =$



f) Logarithmic $f(x) =$

