Groups 1-4

1.)

Find the (infinite) limit:

$$\lim_{x\to 0^+} \ln x - \frac{1}{x}$$

2.)

Evaluate the limit:

$$\lim_{z\to 2} \frac{x^2 - 4x + 4}{x^4 - 3x^2 - 4}$$

3.)

Let m, n be integers (whole numbers) such that $m \geq n > 0$. Consider the limit

$$\lim_{t\to 1} \frac{t^m - 1}{t^n - 1}$$

and come up with an answer **in terms of m and n.** Justify your answer if you can.

Groups 5-8

4.)

Find the (infinite) limit:

$$\lim_{x\to 2^-} \frac{x^2-2x}{x^2-4x+4}$$

5.)

Evaluate the limit:

$$\lim_{h\to 0} \frac{\frac{1}{3+h}-\frac{1}{3}}{h}$$

6.)

Let $m > 0$ be an integer (whole number). Find the below limit **in terms of** m. Justify your answer if you can (especially if this looks familiar!).

$$\lim_{h\to 0} \frac{(x+h)^m - x^m}{h}$$

Group 9

1.)

Find the (infinite) limit:

$$\lim_{x \to 0^+} \ln x - \frac{1}{x}$$

5.)

Evaluate the limit:

$$\lim_{h \to 0} \frac{\frac{1}{3+h} - \frac{1}{3}}{h}$$

7.)

Use a calculator to find an approximate solution a to the below equation. Try to make a reasonable guess as to the exact solution. (Hint: it's between 0 and 5).

$$\lim_{x \to 1} \frac{a^x - a}{x - 1} = a$$