

Homework (analysis): set 2.

1. Find the domain of a function $f(x) = \frac{1}{x^2}$. Determine the interval I on which the function increases and find the inverse function f^{-1} (with the values in I). Sketch the graphs of f and f^{-1} .

2. Sketch the graph of $y = 2 \sin(2x - \frac{\pi}{2})$ for $-2\pi \leq x \leq 2\pi$.

Start with some basic graph ($y = \sin x$ or $y = \cos x$) and use operations on graphs. Describe these operations.

3. Solve the equation

$$\cos^2 x = \frac{1}{2}$$

4. Find $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}$.

5. Find $\lim_{x \rightarrow 1} \left(\frac{2}{1-x^2} - \frac{3}{1-x^3} \right)$.

Hint: the common denominator is $(1-x^2)(1+x+x^2)$.

Please write the solutions clearly (by hand) on A4 paper and give it to me on (or before) 14/11/2018.

Every solution will be given 1 point (correct, minor error possible), 0.5 pt. (good idea, but not all correct), 0 pt. (nothing worthy). The maximum for this homework is 5 pts.