

Math 181 Quiz 3 Version A

1. Find all values of  $x$  which satisfy

(i)  $x^3 \geq x$

(ii)  $|x - 4| < 1.$

2. Use the  $\epsilon$ - $\delta$  definition of continuity to show that  $f(x) = \frac{1}{x}$  is continuous at  $x_0 = 4.$

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3. Use the summation formulas

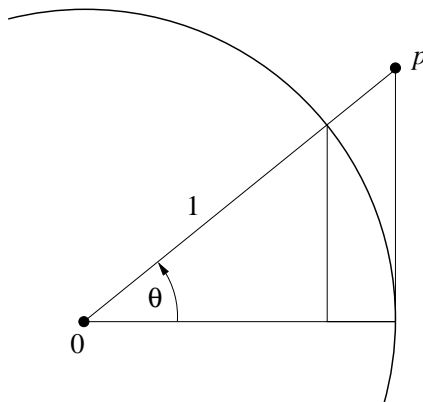
$$\sum_{k=1}^n k = \frac{n(n+1)}{2}, \quad \sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}, \quad \sum_{k=1}^n k^3 = \frac{n^2(n+1)^2}{4}$$

to find a formula for each of the following sums.

(i)  $\sum_{k=3}^n (k^2 + 2k)$

(ii)  $\sum_{k=n}^{n+5} k$

4. Consider the circle of radius one centered at the origin in the Cartesian plane and the two right triangles depicted below.



What are the coordinates of the point  $p$  in terms of the angle  $\theta$ ?