MATH 121 EXAM 1

There will be **50** minutes for you to finish the exam, if you ever get stuck, move on and circle back to it. **No calculators**, one problem per sheet, 100 points in total

1. Convert radians to degrees and degrees to radians
   (a) (5 points) π°
   (b) (5 points) $\dfrac{5\pi}{12}$ rad

2. (a) (15 points) Evaluate $\sin\left(\dfrac{5\pi}{12}\right)$
   (b) (15 points) Find the derivative of $f(t) = te^{\sin(t^2+1)}$

3. (a) (15 points) Compute $\displaystyle\int \frac{3x}{\sqrt{x^2+1}}\mathrm{d}x$
   (b) (15 points) Compute $\displaystyle\int \frac{x^2}{e^x}\mathrm{d}x$

4. (a) (15 points) Compute $\displaystyle\int_0^{\sqrt{\pi}} x^3 \sin\left(x^2\right)\mathrm{d}x$
   (b) (15 points) Below is the graph of function $f(t) = \tan^2 t$, compute the shaded area