Math 182 Honors Quiz 11 Version A

**1.** Find the length of the arc given by $y = \sqrt{x}$ between $x = 1$ and $x = 4$.

**2.** Find the volume generated by revolving the region bounded by $y = 3 + \sin x$, $y = 0$, $x = 0$ and $x = 2\pi$ about the $y$-axis.

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**3.** Solve the following definite and indefinite integrals:

**(i)** $\displaystyle\int_0^{\pi/6} \cos^3 x \, dx$

**(ii)** $\displaystyle\int \sec^3 x \, dx$

**4.** Determine whether the following infinite series converge and explain your answer.

**(i)** $\displaystyle\sum_{n=1}^{\infty} \frac{3^n - 1}{2^n + n}$

**(ii)** $\displaystyle\sum_{n=1}^{\infty} \frac{n!}{(2n)!}$