1. Given the graph $y = h(x)$, for what integer value of $x$ is $h'(x)$ greatest? (graph not included here)

2. Evaluate $\int_{-\pi}^{\pi} \sin(2004x) \, dx$.

3. Find the derivative of $x^{2004} 2004^x$.

4. Find an equation of the line with slope 5 which is tangent to $y = x^2 - x$.

5. Does this series converge or diverge? $\frac{1}{2004} + \frac{1}{4004} + \frac{1}{6004} + \frac{1}{8004} + \frac{1}{10004} + \ldots$

6. Find the area of the region bounded by $y = 2004x^2$ and $y = x^5$. (Simplify within reason.)

7. Evaluate $\lim_{x \to \infty} \frac{\int_0^{\infty} (t^2 + 2t + 3) e^{x^3} \, dt}{e^{x^3}}$.

8. Evaluate $\int \sqrt{x^7 + x^4} \, dx$ for $x$ positive.

9. Evaluate $\int_{-2004}^{0} \sqrt{2004^2 - t^2} \, dt$.

10. Find the inflection points of $f(x) = e^{-x^2}$. (Please give $x$-values only.)

11. Evaluate $\int b^x \, db$ for $b$ and $x$ positive.

12. Evaluate

$$\int \frac{2004}{x(x+1)(x+2)} \, dx.$$ 

13. Evaluate $\int x\sqrt{2x+3} \, dx$.

14. For what $x$ values is the slope of the tangent line to the graph of $y = x^3 - 3x^2 + 2x + 5$ a minimum?