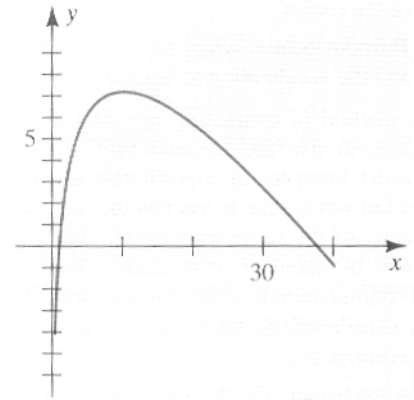


Calculus Test #6 Review

Name _____

1. Find an equation of the tangent line to the graph of $y = x^2 + \ln(2x - 5)$ at the point (3,9).

2. Shown in the figure at the right is the graph of $y = 5 \ln x - \frac{1}{2}x$. Find the coordinates of the absolute/global maximum point on the interval (0,40].



3. Find $f'(x)$ for $f(x) = \sqrt{1 + e^{2x}}$

4. Find $f'(x)$ for $f(x) = \frac{e^x}{x^2 + 1}$

5. Find an equation of the tangent line to the graph of $y = (x - 1)e^x + 3 \ln x + 2$ at the point (1,2).

6. Find $\frac{dy}{dx}$:
 $xe^y + 2x - \ln(y + 1) = 3$

7. If $y = \frac{\ln x}{x}$, find y' .

8. Use logarithmic differentiation to evaluate the following: $y = \frac{e^{4x} - 1}{e^{4x} + 1}$.

9. Differentiate: $y = \ln^4 \sqrt{\frac{t^2 - 1}{t^2 + 1}}$

10. Find the critical numbers of $f(x) = \frac{x^2 + 4}{x - 2}$.

11. If $f(x) = e^x g(x)$, where $g(0) = 2$ and $g'(0) = 5$, find $f'(0)$.

12. If $y = 4^{\sin x}$, find y' . (use logarithmic differentiation)

13. Find $\frac{dy}{dx}$: $ye^{2x} + xe^{2y} = 1$

14. Differentiate: $y = \sin^4(3x^2 - 5x)$

15. Find an equation of the tangent line to the curve $y = x^3 - 3x - 1$ at the point $(2, 1)$.