1. $f'(x) = 3x^2 - 6x + 5$

2. $s'(t) = 3t^2(3t-2) + 3(t^3+2)$

3. $\dfrac{dh}{dx} = \dfrac{-3x^2(4+3x^6) - 18x^5(2-x^3)}{(4+3x^6)^2}$

4. $\dfrac{dg}{dr} = e^{5r} + 5re^{5r}$

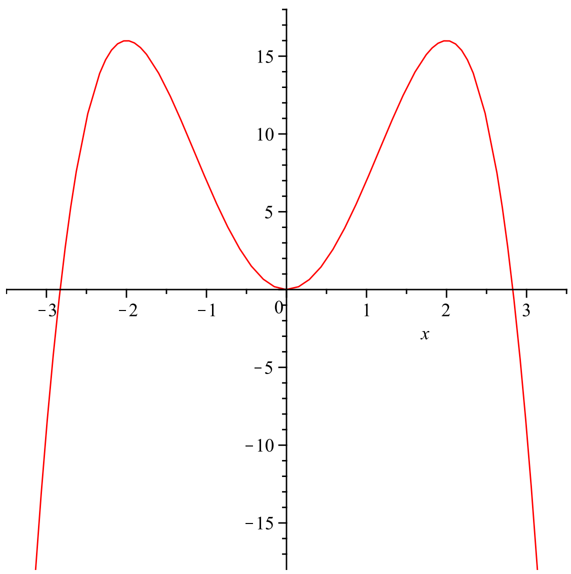
5. $u'(x) = \dfrac{2x}{x^2+1}$

6. $P'(t) = (\ln(2))^2 \cdot 2^t + 2t$

7. The maximal area is $62,5000$ square feet.

8. \$26.87 maximizes revenue.

9. The function has critical points at $x = -2, 0, 2$, it has critical values at $(-2, 16)$, $(0, 0)$, and $(2, 16)$ and it has inflection points at $x = \frac{2}{\sqrt{3}}$ and $x = -\frac{2}{\sqrt{3}}$. The function is increasing on the intervals $(-\infty, -2) \cup (0, 2)$ and it is decreasing on $(-2, 0) \cup (2, \infty)$. The function is concave up on $(-\frac{2}{\sqrt{3}}, \frac{2}{\sqrt{3}})$ and it is concave down on $(-\infty, -\frac{2}{\sqrt{3}}) \cup (\frac{2}{\sqrt{3}}, \infty)$. It has local maximums at $(-2, 16)$ and at $(2, 16)$ and it has a local minimum at $(0, 0)$. The local maximums in this function are also global maximums. Below is the graph.



10. There is only one global minimum and it is at $(1, 2)$. There is no global maximum.

11. The maximum profit is achieved when 300 steaks are sold.