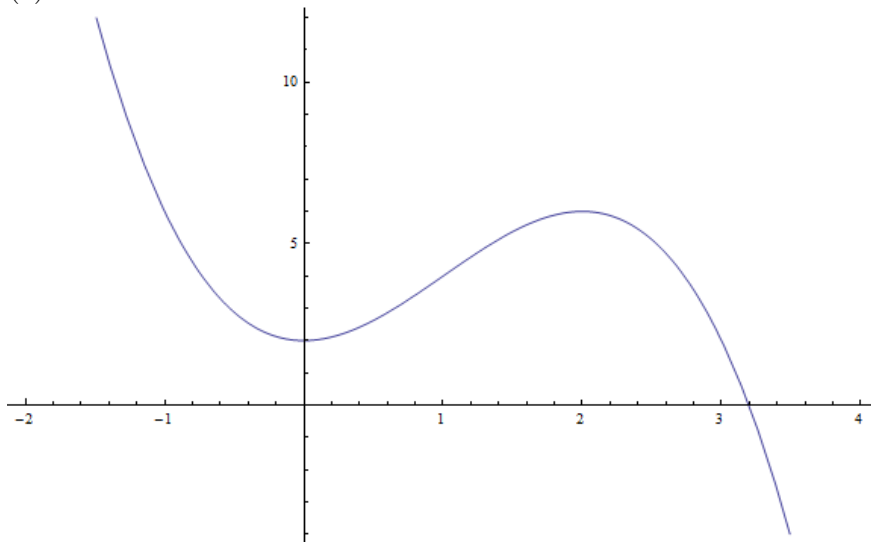


1. maximum value = 27, attained at $x = 2$
 minimum value = -1, attained at $x = 0$
2. (a) increasing on $[0, 2]$
 decreasing on $(-\infty, 0]$ and $[2, \infty)$
 local minimum at $(x, y) = (0, 2)$
 local maximum at $(x, y) = (2, 6)$
 - (b) concave up on $(-\infty, 1]$
 concave down on $[1, \infty)$
 inflection point at $(x, y) = (1, 4)$
 - (c)



3. minimum cost = \$270, attained when the dimensions are $3\text{m} \times 6\text{m} \times \frac{10}{9}\text{m}$.
4. $s(t) = t^5 - 2t^3 + t$
5. (a) $28/15$
 (b) 10
 (c) 0
 (d) $-\frac{1}{2}e^{-t^2} + C$
 (e) $\ln(\ln s) + C$
6. (a) $\ln(x)$
 (b) xe^x