MATH 112 – EXAM II Hints and Answers
Version Alpha
Winter 2009

1. (a) (4 points) ANSWER: $\dfrac{dv}{du} = e^{10u} \cdot \dfrac{1}{u^3+u^2} \cdot (3u^2+2u) + \ln(u^3+u^2) \cdot e^{10u} \cdot 10$

   (b) (4 points) ANSWER: $g'(t) = \dfrac{2}{3}\left(\dfrac{4}{15t}+1\right)^{-1/3}\left(-\dfrac{4}{15}t^{-2}\right)$

   (c) (7 points) HINT: Compute the partial derivatives of P and evaluate each at $x = 2$ and $y = 5$.
   ANSWER: B

2. (a) (4 points) ANSWER: $TR(q) = 15q - 4q^{3/2}$; $TR'(q) = 15 - 6q^{1/2}$

   (b) (3 points) ANSWER: $q = 6.25$

   (c) (4 points) HINT: $TR''(q) = -3q^{-1/2}$, which is negative at $q = 6.25$.
   ANSWER: The critical number gives a maximum.

   (d) (4 points) HINT: $MC(q) = VC'(q)$. Set $MR = MC$ and solve for q.
   ANSWER: $q = 4.69$ Thousand Trinkets

   (e) (3 points) HINT: Compute $TR(1)$ and $VC(1)$ and use the fact that profit=$TR - (VC + FC)$.
   ANSWER: $FC = 3.16$ Thousand Dollars

   item (17 points) HINT: The five vertices are $(0, 10)$, $(0, 8.8)$, $(4.5, 0)$, $(8.5, 0)$, and $(0.8, 5.92)$.

   ANSWER: smallest: 22.5; largest: 42.5