MATH 284. ANSWERS TO SPRING 2011 FINAL EXAM

Link to the exam: `http://goo.gl/AwU1uu`

#1. (a) 2,225 units; (b) 1,090 units, revenue $15,260.

#2. $253.50

#3. skip

#4. (a) $-3/2$;
(b) skip [4];
(c) $-2/5$

#5. (a) $\dfrac{4x}{4x^2 - 4}$;
(b) $9(x^2 - 3x + 1)^8(2x - 3)$;
(c) $y = 2 - 2(x - 1)$

#6. (a) 91;
(b) $-0.2q + 80$; with $q = 91$ this is 61.8.
(c) $\frac{dq}{dm} = 2m + \frac{m}{\sqrt{m^2+19}}$; with $m = 9$ this is 18.9;
(d) skip

#7. (a) all numbers;
(b) $f'(x) = x^3 - 4x$. Solutions of $f'(x) = 0$ are $0, -2, 2$.
(c) Increasing on $(-2, 0)$ and $(2, \infty)$. Decreasing on $(-\infty, -2)$ and $(0, 2)$. Max at 0, min at $-2, 2$.
(d) $f''(x) = 3x^2 - 4$. Solutions of $f''(x) = 0$ are $\sqrt{4/3}$ and $-\sqrt{4/3}$.
(e) Concave up on $(-\infty, -\sqrt{4/3})$ and on $(\sqrt{4/3}, \infty)$. Concave down on $(-\sqrt{4/3}, \sqrt{4/3})$. Inflection points $-\sqrt{4/3}$ and $\sqrt{4/3}$.

#8. $q = 73$.