Math 125 Pre – Calculus
Kenny Shah, Fall 2017, (2.2 – 2.6)

NAME: SOLUTIONS
CLASS TIME: 7 & 8 AM

Quiz # 3

Please show all of your work for maximum credit. Good luck!!!

1. **(4 points) A long distance calling service charges a 10 cent connection charge for each call, 7 cents a minute for the first 10 minutes and 5 cents a minute for each additional minute beyond that. Express the cost *C*, in dollars, of a phone call as a piece-wise defined function of the length *x* of the call, in minutes.**

Sol: $C(x) = \begin{cases} .10 + 0.07x; & 0 \le x \le 10 \\ \underbrace{0.80}_{\downarrow\ 0.10+0.07(10)} + 0.05(x-10); & x > 10 \end{cases}$

2. **(3 points) Find the inverse function. Make sure to use the right notation for the inverse function.**

C = g(x) = 600 + 50x, where C = g(x) is the cost of producing x air-conditioners.

Sol: $C = 600 + 50x$, solve for x

$-600 \quad -600$

$C - 600 = 50x$

$\frac{C-600}{50} = \frac{50x}{50}$

$x = \frac{C-600}{50}$

$\boxed{x = g^{-1}(C) = \frac{C-600}{50}}$

3. **(3 points) Let P = f(t) be the population, in millions, of a country at time t in years and let E = g(P) be the daily electricity consumption, in megawatts, when the population is P. Give the meaning and units of the function. Assume both f and g are invertible. Interpret the following in terms of the application problem:**

(a) g(f(t)):

Sol: $g(f(t))$ represents the daily electricity consumption, in megawatts at time t, in years.

(b) $f^{-1}(P) = t$

Sol: $f^{-1}(P)$ represents the time, in years @ given population, in million of a country.