WEEK 6 PRACTICE QUESTIONS

1. Answer each of the following questions, showing all working.
   (a) Find $f(1)$ where $f(x) = x^2 + x$.
   (b) Find $f(4)$ where $f(x) = (-x)^2 + x$.
   (c) Find $f(1)$ where $f(x) = -x^2 + x$.
   (d) Find the domain of $f(x) = x^2 + 7$.
   (e) Find the domain of $f(x) = \dfrac{9}{\sqrt{3x}}$.
   (f) Find the domain of $f(x) = 2 - |x|$.
   (g) Find the range of $f(x) = \dfrac{-6}{|-2+x|}$.
   (h) Find the range of $f(x) = -2x^2 + 8$.
   (i) Find the range of $f(x) = 11 + \sqrt{x}$.
   (j) Solve each of the following quadratic equations without using the quadratic formula.
      (i) $4x(-2x - 1) = 0$.
      (ii) $(-2x - 3)(3x + 2) = 0$.
      (iii) $3(-x + 3)(2x - 2) = 0$.
      (iv) $(x + 2)^2 = 0$.
   (k) Solve $2x^2 - 3x + 2 = 0$.
   (l) Solve $-2x^2 - 6x - 4 = 0$.

2. Answer each of the following questions, showing all working.
   (a) Find $f(-3)$ where $f(x) = (-x)^2 + x$.
   (b) Find $f(4)$ where $f(x) = -x^2 + x$.
   (c) Find $f(-1)$ where $f(x) = -x^2 - x$.
   (d) Find the domain of $f(x) = -3 + |x|$.
   (e) Find the domain of $f(x) = \dfrac{-3}{\sqrt{-14+x}}$.
   (f) Find the domain of $f(x) = \dfrac{-11}{x - 5}$.
   (g) Find the range of $f(x) = -12 + \sqrt{x}$.
   (h) Find the range of $f(x) = -12\sqrt{x}$.
   (i) Find the range of $f(x) = 2x^2 + 2$.
   (j) Solve each of the following quadratic equations without using the quadratic formula.
      (i) $4x(x - 2) = 0$.
      (ii) $(-3x - 3)(2x + 2) = 0$.
      (iii) $4(4x - 3)(-x - 2) = 0$.
      (iv) $(-2x + 1)^2 = 0$.
   (k) Solve $x^2 + x + 3 = 0$.
   (l) Solve $4x^2 + 5x + 1 = 0$.