

Problem 8 (5 points). Let  $f(x) = x^2 + 1$  and  $g(x) = 2x^2 - 2x - 14$ .

a) Solve  $f(x) = g(x)$

$$x^2 + 1 = 2x^2 - 2x - 14$$

$$0 = x^2 - 2x - 15$$

$$0 = (x+3)(x-5)$$

$$\text{So either } x+3=0 \Rightarrow$$

$$x = -3$$

or  $x-5=0 \Rightarrow$

$$x = 5$$

Check This  
by plugging ~~the~~  $x$ -values  
onto original function

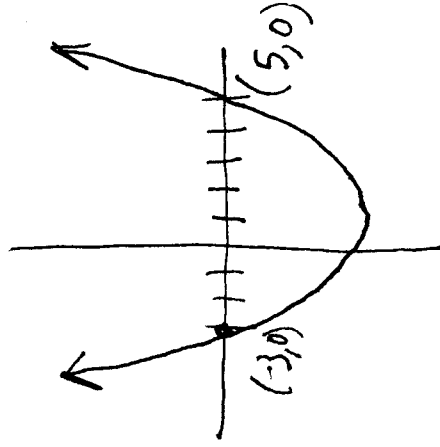
b) Solve  $f(x) > g(x)$ .

$$x^2 + 1 > 2x^2 - 2x - 14$$

$$0 > x^2 - 2x - 15$$

$$f(x) = x^2 - 2x - 15$$

$$= (x+3)(x-5)$$



$$\text{So } 0 > x^2 - 2x - 15$$

$$\text{if } -3 < x < 5$$