

# Practice Midterm

- \* Your midterm will be typed and will have space for you to work out the problems
- \* This does not necessarily represent the number of problems on the exam
- \* I recommend that you attempt the practice exam without notes etc. to get a more accurate idea of how well you can do the problems.

- ① Find the equation of the line through  $(12, 1)$  with slope  $\frac{3}{4}$ . Write your answer in the form  $y = mx + b$
- ② Find the slope of the line between the two points  $(1, -6)$  and  $(-2, 3)$
- ③ Solve for  $x$ 
  - a)  $2x^2 - 11x - 45 = 0$
  - b)  $x^2 - x - 17 = 0$
- ④ Find the center and radius of the circle  $(x-3)^2 + (y+15)^2 = 25$
- ⑤ Solve the inequality and write your answer in interval notation
  - a)  $2 \leq \frac{x-2}{3} < 8$
  - b)  $|x-5| > 6$
  - c)  $x^2 - 16x + 60 > 0$

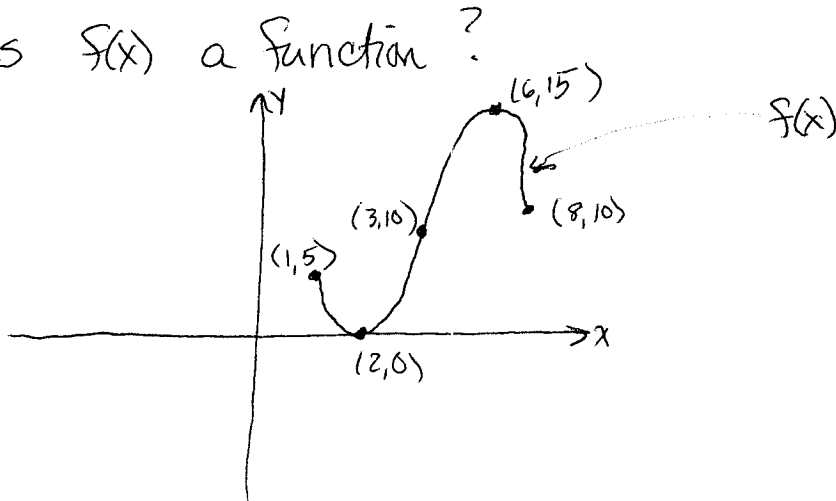
⑥ Find the domain of the following functions

a)  $f(x) = \sqrt{x^2 + x - 6}$

b)  $f(x) = \sqrt{\frac{1}{x+2}}$

c)  $f(x) = \frac{1}{x^2 - 9}$

⑦ Is  $f(x)$  a function?



What are the domain and range of  $f(x)$ ?

⑧ Give the equation of the graph which results from performing each of the following operations on the graph  $f(x) = |x|$

a) Translate right 3 units then up 2 units

b) Reflect in the y-axis then translate down 5 units

c) Reflect in the x-axis then translate left 4 units

⑨ Given  $f(x) = x + 1$  and  $g(x) = x^2$

a)  $(f \circ g)(x)$

b)  $(g \circ f)(x)$

c)  $(f + g)(x)$

d)  $(f - g)(x)$

e)  $\left(\frac{f}{g}\right)(x)$

f)  $(fg)(x)$

⑩ Show that  $f(x)$  and  $g(x)$  are inverse functions,

$$f(x) = \frac{x-3}{2}$$

$$g(x) = 2x+3$$