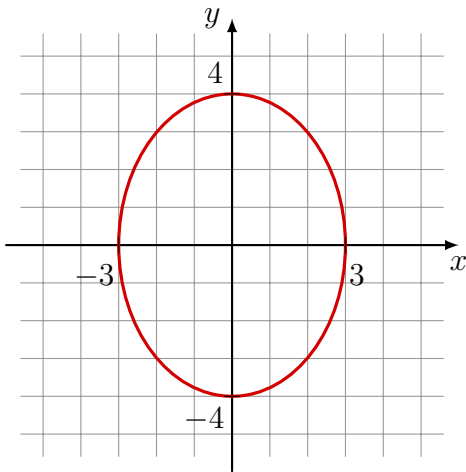


MATH 120
 SPRING 2012
 EXAM 3

NAME:

- 10 pts. Write an equation in slope-intercept form for the line through $(-2, -7)$ and parallel to $3x - 4y = 2$.
- 10 pts. Write an equation in slope-intercept form for the line through $(2, -4)$ and perpendicular to $8x - 3y = 6$.
- 10 pts. Give the domain and range of the relation given by the graph below. Is the relation a function?



- 10 pts. Let $f(x) = x^2 + \sqrt[3]{x}$. Find $f(-8)$ and $f(c)$.
- 10 pts. each Find the domain and range of each function.
 - $y = x^5$
 - $y = |x| + 25$
- 5 pts. each Find the domain of each function (not the range).
 - $\alpha(x) = \frac{x+1}{3x-2}$
 - $\beta(x) = \sqrt{9x-5}$
 - $\gamma(x) = \sqrt{36-x^2}$

- 10 pts. each Refer to the functions α, β, γ in Problem 6. There is no need to simplify any of your expressions, but domains must be explicit.
 - Find $\alpha + \gamma$ and its domain.
 - Find α/β and its domain.
 - Find $\beta \circ \beta$ and its domain.
 - Find $\beta \circ \gamma$ and its domain.
- 10 pts. Let $T(x) = \frac{2}{(7-2x)^{10}}$. Find functions f and g such that $f \circ g = T$.
- 10 pts. Show the function $f(x) = 2x^3 - 1$ is one-to-one.
- 10 pts. Show that $g(x) = (x-5)(x+9)$ is not one-to-one.
- The function $f(x) = \frac{x+1}{x-3}$ is one-to-one.
 - 10 pts. Find the inverse f^{-1} of f .
 - 5 pts. Find the range of f .
 - 5 pts. Find the range of f^{-1} .