

Exam III Preview :: Math 104 :: 4/1/14

This exam covers most of Chapters 7 and 8 from the Textbook.

1. Lines and such
  - (a) Find the  $x$  and  $y$  intercepts then graph the line.  $y = \frac{3}{5}x - \frac{2}{3}$
  - (b) Find the  $x$  and  $y$  intercepts then graph the line.  $3x - 2y = 6$
  - (c) Find the  $x$  and  $y$  intercepts then graph the line.  $y = 3$
  - (d) Find the  $x$  and  $y$  intercepts then graph the line.  $x = 5$
2. Inequalities
  - (a) Graph the inequality.  $2x - y < 4$
  - (b) Graph the inequality.  $3x + 2y \geq 6$
  - (c) Graph the inequality.  $x > 2$
  - (d) Graph the inequality.  $y < -3$
3. Find the slope-intercept equation of the line that:
  - (a) passes through  $(-2, 4)$  and  $(3, -2)$ .
  - (b) passes through  $(2, 4)$  and  $(2, 0)$ .
  - (c) passes through  $(1, 3)$  and  $(-1, 3)$ .
  - (d) is parallel to the line  $5x + 2y = 7$  and contains the point  $(-2, -4)$ .
  - (e) is perpendicular to the line  $x - 6y = 9$  and contains the point  $(4, 7)$ .
4. The grade of a highway up a hill is 25%. How much change in horizontal distance is there if the vertical height of the hill is 120 feet?
5. On a final exam in math class, the number of points earned has a linear relationship with the number of correct answers. John got 96 points when he answered 12 questions correctly. Kimberly got 144 points when she answered 18 questions correctly. Find the equation for the relationship. Let  $y$  be the number of points and  $x$  be the number of correct answers. Give your answer in slope-intercept form.
6. Function Evaluation/Composition. Let  $f(x) = x^2 - 1$  and  $g(x) = \sqrt{x}$ 
  - (a) Compute  $f(5)$  and  $g(4)$
  - (b) Compute  $f \circ g(x)$
  - (c) Compute  $g \circ f(x)$
  - (d) Compute  $g \circ g(x)$

7. Using the functions above find the domain of the given functions

(a)  $f(x)$

(b)  $g(x)$

(c)  $\frac{f(x)}{g(x)}$

(d)  $\frac{g(x)}{f(x)}$

8. Variation and Word Problems

(a) If  $y$  varies inversely as  $x$ , and if  $y = 1/2$  when  $x = -8$ , find the constant of variation. find  $y$  when  $x = 5$  and  $z = 12$ .

(b) If  $y$  varies jointly as  $x$  and  $z$ , and if  $y = 18$  when  $x = 8$  and  $z = 9$ ,

(c) Find two numbers whose sum is 60, such that the sum of the square of one number plus 12 times the other number is a minimum.

9. Graphing Quadratics

(a) Find the  $x$  intercepts and the vertex of the parabola  $f(x) = 4x^2 - 16x - 48$

(b) Graph  $f(x) = (x - 2)^2 - 3$ .