

Southern Illinois University
Math 107: Intermediate Algebra
Instructor: Austin Mohr
Sections 7 and 17
Fall 2007

Exam 3

1. Simplify each radical expression. (18 points)

a. $\frac{p^2-25}{4p} \div \frac{5-p}{2}$

b. $\frac{4}{x+3} - \frac{x}{x-3} - \frac{18}{x^2-9}$

c. $\frac{\frac{x^2-16y^2}{xy}}{\frac{1}{y} - \frac{4}{x}}$

2. Solve each equation. Don't forget to check which solutions are in the domain. (10 points)

a. $\frac{5x-8}{x+2} = \frac{5x-1}{x+3}$

b. $\frac{x}{x-3} + \frac{4}{x+3} = \frac{18}{x^2-9}$

3. Choose only **TWO** of the following three problems to solve. (14 points)

Circle the letters of the two problems you want graded.

a. You are planning to purchase a lot of 10,000 assorted computer parts. You inspect 100 of the parts at random and find that 82 of them are functioning properly. How many parts from the entire lot do you expect to be functioning properly?

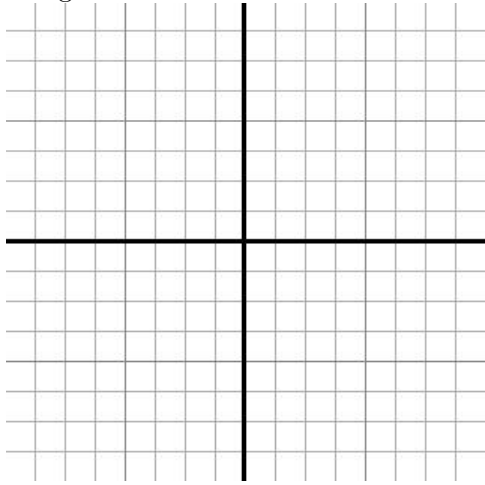
b. Kellen's new boat goes 15 mph. Find the rate of the current of the river if she can go 4 mi against the current in the same amount of time she can go 10 mi against the current.

c. After painting his house, Ron decides to roof the house. He can do the job in 8 hours alone. If he endangers his son's life by dragging him onto the roof, they can finish the job together in 5 hours. How long would it take his son to do the job alone?

4. Graph each function. Give its domain and range. (18 points) a. $f(x) = \sqrt{x+2}$

Domain:

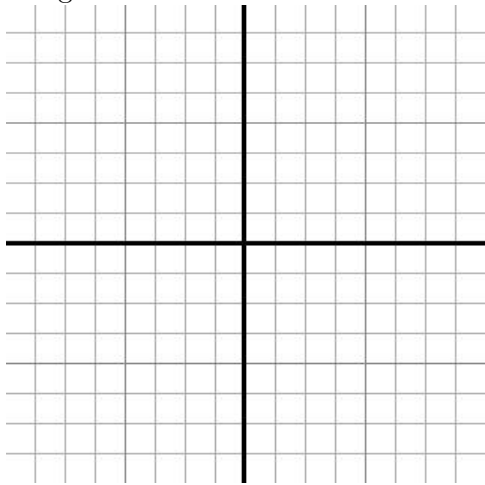
Range:



b. $f(x) = \sqrt[3]{x} - 2$

Domain:

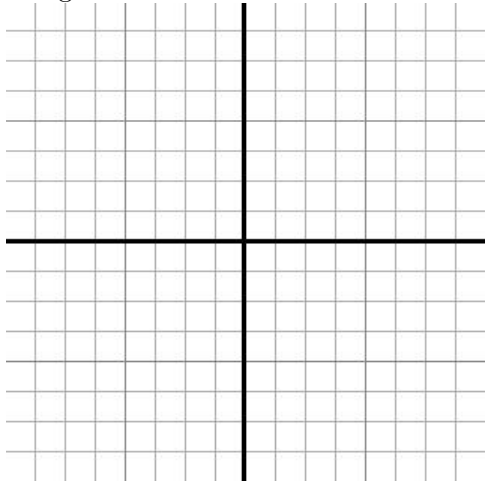
Range:



c. $f(x) = \frac{1}{x+1}$

Domain:

Range:



5. Simplify each radical expression. (30 points)

a. $p^{\frac{2}{3}}(p^{\frac{1}{3}} + 2p^{\frac{4}{3}})$

b. $\sqrt{50} - \sqrt{98} + \sqrt{72}$

c. $(3\sqrt{5} + 2\sqrt{7})^2$

d. $\frac{8}{\sqrt{7} + \sqrt{5}}$

e. $\sqrt[3]{8a^3b^5c^9}$

f. $\sqrt[3]{\frac{13}{81}}$

6. Solve the following equation. (10 points)

$$\sqrt{4x+7} - 4 = \sqrt{4x-1}$$