

Ch. 1 – 2

Name: \_\_\_\_\_

Show all work for full credit.

9/16/14 *Take Home Exam Ch. 1 – Math 260*

Distinguish answers from work.

1.) Determine the number of distinct solutions and tell whether they are rational, irrational, or nonreal complex numbers. Do not solve.

$$2x(x-3) = x-1$$

2.) Solve.

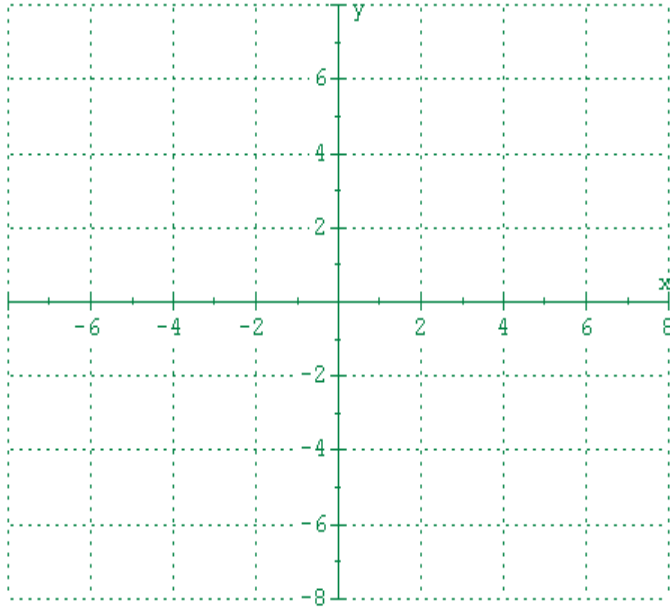
$$x = \sqrt{x+7} + 5$$

3.) Simplify by factoring.

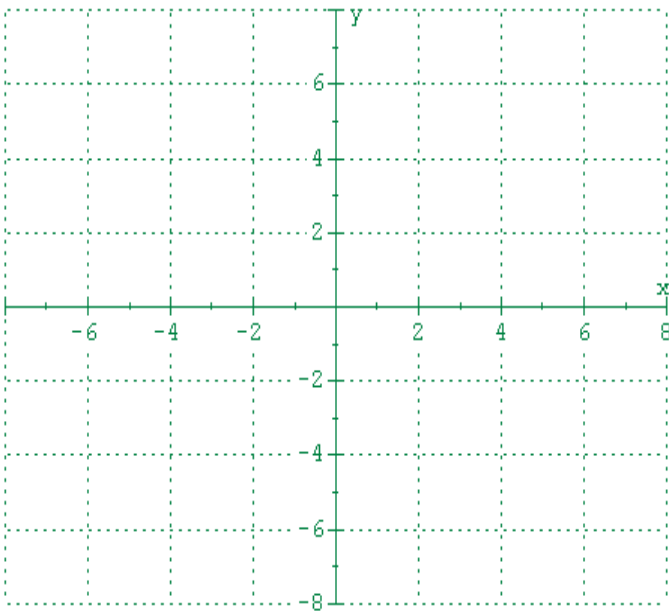
$$\frac{3(1+x)^{1/3} - x(1+x)^{-2/3}}{(1+x)^{2/3}}$$

4.) Given the line  $3x + 2y = 20$  find the following:

a. Graph the line that is perpendicular to the given line and passes through the point  $(-1, 2)$ .



5.) Given  $x^2 + y^2 - 8x + 2y + 13 = 0$ , determine the center and radius of the circle and sketch the graph.



**6.) A jeweler has 5 rings, each weigh 18g, made of an alloy of 10% silver and 90% gold. He decides to melt down the rings and add enough silver to reduce the gold content to 75%. How much pure silver should he add?**

**7.) A woman cycles 8mph faster than she runs. Every morning she cycles 4 miles and runs 2.5 miles, for a total one hour of exercise. How fast does she run?**

8.) Solve.  $x^3 - 2x^2 - 5x + 10 = 0$

9.) Solve.  $\frac{x+1}{x-3} \geq -2$

**10.) Rationalize the denominator.**

$$\frac{\sqrt{2}}{\sqrt{3} + \sqrt{5}}$$