

MATH 120
SUMMER 2015
EXAM 2

NAME:

1. 10 pts. each Solve the quadratic equation.

 - (a) $5x^2 - 2 = 3x$ (by factoring)
 - (b) $x^2 - 3x - 6 = 0$ (by completing the square)
2. 15 pts. A rectangular piece of metal is 10 cm longer than it is wide. Squares with sides 2 cm long are cut from the four corners, and the flaps are folded upward to form an open box. If the volume of the box is 832 cm^3 , what were the original dimensions of the piece of metal?
3. 15 pts. A rectangular parcel of land is 6 meters longer than it is wide. Each diagonal from one corner to the opposite corner is 174 meters long. What are the dimensions of the parcel?
4. 15 pts. With both taps open, Harry can fill his kitchen sink in 6 minutes. When full, the sink drains in 10 minutes. How long will it take to fill the sink if Harry opens both taps but forgets to put the stopper in the drain?
5. 10 pts. each Solve each equation.

 - (a) $\frac{x}{x+2} + \frac{1}{x} + 3 = \frac{2}{x^2 + 2x}$
 - (b) $\sqrt{2x} - x + 4 = 0$
 - (c) $\sqrt{x} - \sqrt{x+3} = -1$
 - (d) $3r^4 + 10r^2 - 25 = 0$
 - (e) $|18 - 4y| = 15$
6. 10 pts. each Solve each inequality. Write each solution set in interval notation.

 - (a) $6x - (2x + 13) \geq 3x - 5$
 - (b) $-3 < \frac{x-4}{6} < 2$
 - (c) $x^2 + 5x < -7$
 - (d) $(t+5)(3t-4)(t+2) \geq 0$
 - (e) $\frac{4}{2-x} \geq \frac{3}{1-x}$
 - (f) $|8x - 3| < 4$
7. 10 pts. Find the exact distance between $(-6, -5)$ and $(8, 12)$.
8. 10 pts. Write $x^2 + y^2 + 8x - 6y + 16 = 0$ in Center-Radius form, then give the center and radius of the circle.