

NAME: \_\_\_\_\_

- Please complete this worksheet in place of normal class on 1-15-03 and 1-17-03. There is a total of 36 possible points. Show all work (use additional paper). Decimal answers must be accurate to 3 places beyond the decimal.
- This worksheet covers topics in Sections 0.5 through 1.2 in your text. You may work together, use your text, and ask questions of anyone else.
- You may use technology to verify your results. But your answer must be accompanied by work that justifies your conclusions.

1. **(12 points)** (This problem is similar to those in 0.5 in your text.) Be sure that you review enough of the material to manipulate and simplify fractions and expressions with radicals.

(a) Consider the expression

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

- i. Evaluate for  $x = 3$
- ii. Name the value(s) of  $x$  for which this expression is undefined.
- iii. Simplify the expression.

(b) Consider the expression

$$\frac{\sqrt{x+5} - \sqrt{x}}{5} - \frac{1}{\sqrt{x} + \sqrt{x+5}}$$

- i. Evaluate for  $x = 4$
- ii. Name the value(s) of  $x$  for which this expression is undefined.
- iii. Simplify the expression.

2. **(12 points)** (This problem is similar to those in Section 1.1 in your text.) Review enough material to understand how to find the midpoint of a pair of points and the distance between a pair of points.

Consider the points  $A = (-1, -2)$ ,  $B = (5, 4)$ ,  $C = (3, 0)$

- (a) Prove that the triangle  $ABC$  is isosceles (has two sides of the same length).
- (b) Find the midpoint  $M$  of the longest side of the triangle  $ABC$ .
- (c) Find the *altitude*  $h$  of the triangle by finding the distance between the midpoint  $M$  and the vertex not on the edge containing  $M$ .

3. **(12 points)** (This problem is similar to this in Section 1.2 in your text.) Review enough material to understand how to graph an equation, how to find intersections of a pair of equations, and how to find the break-even point for given cost and revenue equations. Your graphing calculator will be useful in these exercises.

- (a) Graph the equation  $y = (3 - x)^2$ . Does the point  $(7, 15)$  lie on this graph? Explain how you know.
- (b) Find the point(s) of intersection, if any, of the graphs of  $y = (3 - x)^2$  and  $y = 4x - 2$
- (c) Find the break-even value(s) for cost  $C = 7\sqrt{x} + 5000$  and  $R = 8x$ . Give your answer correct to 3 places beyond the decimal.