Mth 95 Pre Exam 1 Activity *Franz Helfenstein* Name

1) Eddy can buy Q-bolts for \$2.30 each with S&H of \$10.95 or he can buy Q-bolts for \$1.95 each with S&H of \$15.00. For what value of x are the choices approximately equal?

2) The formula for a conic frustum is $V = \frac{1}{3}\pi H(R^2 + Rr + r^2)$ Solve this equation for H.

3) The formula for determining the size when two ducts (a & b) are combined is $F = \frac{a\,b}{a+b}$. Solve this equation for 'a'. Problem (3a) $2\frac{1}{4}$ STO▸ A, $4\frac{3}{8}$ STO▸ B: Compute F as a fraction.

4) Consider: $\frac{4x-7}{2} = 10 - 4\frac{4-9x}{3}$

(a) Use STO▸ to check if X = 4.7 is an <u>exact</u> solution
(b) Solve by graphing
(c) Solve by algebra

5) 10 gal of a special sealer is needed that is 35% hardener and 65% resin. Brand A is 25% hardener & 75% resin while Brand B is 50% hardener & 50% resin. How much of each (Brand A/Brand B) must be used to make the special sealer. Let A = gal of A, B = gal of B. Write a 2 × 2 system of equations which models this scenario and then solve the problem by both addition and substitution methods.

6) A city map has a well located at its center (0, 0). The map coordinates frame [-25, 25] × [-20, 20]. Main St follows the x-axis and Union Ave follows the y-axis. (a) Pipeline A passes through the well and (7, 5). Give the linear equation for pipeline A. (b) Pipeline (B) passes through (8, -15) & (-8, -18). Give the linear equation for pipeline B. (c) Use your TI to find where those pipelines intersect (this is off the map). (d) Use your TI to find where pipeline B intersects Main St (this is off the map).

7) Beth decides to make aprons and sell them at the Fair. She buys a permit for $50 and spends $150 on her booth. It also costs her $3.70 to make each apron. She plans to sell them for $15 each. Let x = aprons, y = $.

(a) Write a linear equation for Beth's <u>expenses</u> (what she spends).

(b) Write a linear equation for Beth's <u>revenues</u> (what she receives from sales).

(c) Write a linear equation for Beth's <u>profits</u> (revenues – expenses).

(d) Determine how many aprons Beth must sell to breakeven.

(e) Determine how much she will earn if she sells 40 aprons.

(f) How many aprons must she sell to earn $1,500?

8) A sensor has the flowing readings. Assuming a linear relationship, use the first two readings to find y = mx + b. Then determine the missing readings.

(x) CO_2	(y) volts
3×10^{-2}	7.4
10^{-3}	-3.3
0	
	0
2.6	
	-0.05

9) John needs to replace his 400' of barbed wire fence with either wood fence or rabbit fence. Ideally, he would like to use wood the whole way but it costs $3.20/ft while the rabbit fence is only $1.87/ft. He has a limited budget of $1,000. Let x = wood portion. Write an equation for the cost of the entire new fence. Then determine how much of each type is possible.

10) Write the result as a <u>fraction</u> (both <u>improper and proper</u>: rounded to the <u>hundredths</u> place:

a) $2\frac{5}{8} \times 3\frac{1}{8} =$

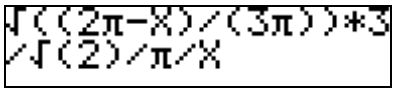
b) $\dfrac{2\frac{5}{8} - 1\frac{7}{8}}{2\frac{5}{8}} =$

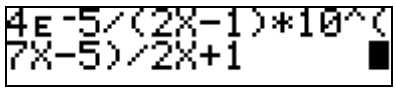
c) $\dfrac{3^{6\pi - 5}}{2000\pi} \approx$

d) $\sqrt{(4\pi - 5)10^2 - 2)} \approx$

e) $\dfrac{5.8 \times 10^6}{7.2 \times 10^4} \approx$

Rewrite this expression <u>without</u> parentheses:





$$\frac{2\pi - x}{3\pi} \cdot \frac{3}{\pi x\sqrt{2}}$$

$$\frac{4 \times 10^{-5}}{2x - 1} \cdot \frac{7x - 5}{2} \cdot x + 1$$