**Mth 95 Pre Exam 1 Activity *Franz Helfenstein* Name To see Answer Key use ¶ button**

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?

2.30x +10.95 = 1.95x + 15.00 x ≈ 11.57 → 12 bolts

2) The formula for a conic frustum is V = ⅓ π H (R2 + Rr + r2) Solve this equation for H.

H = 3V/[π(R2 + Rr + r2)]

3) The formula for determining the size when two ducts (a & b) are combined is F = . Solve this equation for 'a'. Problem (3a) 2 ¼ A, 4 ⅜ B: Compute F as a fraction.

a = Fb/(b − F) F = 315/212

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| 4) Consider: | (a) Use to check if X = 4.7 is an exact solution  (b) Solve by graphing  (c) Solve by algebra |

(a) Close but not an exact sol'n (b) x = 4.6666667 (c) x = 14/3

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.

0.25A + 0.50 B = 0.35 (10), 0.75A + 0.50 B = 0.65 (10) A = 6 gal, B = 4 gal

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).

(a) y = (5/7)x (b) y = (3/16)x – 33/2 (c) ≈(-31.3, -22.4) (d) (88, 0)

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 expenses (what she spends). E = 3.7x + 200

(b) Write a linear equation for Beth's revenues (what she receives from sales). R = 15x

(c) Write a linear equation for Beth's profits (revenues − expenses). P = 11.3x − 200

(d) Determine how many aprons Beth must sell to breakeven. x ≈ 17.7 → 18 aprons

(e) Determine how much she will earn if she sells 40 aprons. P = $252

(f) How many aprons must she sell to earn $1,500? x ≈ 150.4 → 151 aprons

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| 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.  y = (10700/29)x – 532/145 ≈ 369.0x – 3.67 | |  |  | | --- | --- | | (x) CO2 | (y) volts | | 3 × 10-2 | 7.4 | | 10-3 | -3.3 | | 0 | ~ -3.67 | | ~0.0099 | 0 | | 2.6 | ~955.6 | | ~0.0098 | -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.

3.20x +(1.87)(400 − x) = 1,000 x ≈ 189.5 ft

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| 10) Write the result as a fraction (both improper and proper: | | a) 2 ⅝ × 3 ⅛ = 525/64 = 22 13/64 | | b) = 2/7 |
| rounded to the hundredths place: | c) ≈ 645.26 | | d) ≈ 27.47 | e) ≈ 80.56 |

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| Rewrite this expression without parentheses: |  |  |

Answer on next page

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