Analytic Geometry + Systems REVIEW

1. Husky St: $2x - y + 10 = 0$

$\boxed{2x + 10 = y}$ slope

Raider St ⊥ Husky St.

$-\frac{1}{2} \leftarrow \frac{2}{1}$

negative reciprocal

$y = -\frac{1}{2}x + b$

$35 = -\frac{1}{2}(30) + b$

$35 = -15 + b$

$\boxed{50 = b}$

Raider St: $\boxed{y = -\frac{1}{2}x + 50}$

Find $A(x, y)$

$2x + 10 = -\frac{1}{2}x + 50$

$2x + \frac{1}{2}x = 50 - 10$

$\frac{5}{2}x = 40$

$\boxed{x = 16}$

$y = 2(16) + 10$

$\boxed{y = 42}$

$\boxed{A(16, 42)}$

$d(A,B) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(30-16)^2 + (35-42)^2}$

$= \sqrt{245}$

$\boxed{d(A,B) \approx 15.65 \text{ units}}$

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2. $a_{BC} = \frac{20-10}{25-0} = \frac{10}{25} = \boxed{\frac{2}{5}}$

$\overline{BC} \parallel \overline{AD}$

slopes: $\frac{2}{5} = \boxed{\frac{2}{5}}$

AD: $y = \frac{2}{5}x + b$

$10 = \frac{2}{5}(15) + b$

$10 = 6 + b$

$\boxed{4 = b}$

$\boxed{y = \frac{2}{5}x + 4}$ ↑ y int

$\boxed{A(0, 4)}$ ↑ y int

$D(15, 10)$

$d(A,D) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(15-0)^2 + (10-4)^2}$

$= \sqrt{261}$

$\boxed{d(A,D) \approx 16.16 \text{ units}}$

3. a) $x_{int} = (10, 0)$

$y = \frac{2}{5}x + b$

$0 = \frac{2}{5}(10) + b$

$0 = 4 + b$

$-4 = b$

$y = \frac{2}{5}x - 4$

Functional

$y = \frac{2}{5}x - 4$

$0 = 2x - 5y - 20$

General

$\frac{x}{a} + \frac{y}{b} = 1$

x_{int} y_{int}

$\frac{x}{10} + \frac{y}{-4} = 1$

Symmetric

b) $x_{int} = -3$ $y_{int} = 6$

$\frac{x}{-3} + \frac{y}{6} = 1$

symmetric

x_{int} y_{int}

$(-3, 0)$ $(0, 6)$

$a = \frac{\Delta y}{\Delta x} = \frac{6-0}{0--3} = 2$

$y = 2x + 6$

Functional y_{int}

$0 = 2x - y + 6$

General

4. x = cost of a basket of peppers

y = " " " " " zucchini

$8(5x + 4y = 35.25)$

$-5(8x + 5y = 49.75)$

$40x + 32y = 282$

$+ \quad -40x - 25y = -248.75$

$7y = 33.25$

$y = \$4.75$

$5x + 4(4.75) = 35.25$

$5x + 19 = 35.25$

$5x = 16.25$

$x = \$3.25$

Pascal:

$9(3.25) + 6(4.75) =$

$\$57.75$

5. x = # of boxes of chocolate

y = " " bags of coffee

$$2x + 3y = 7700$$

$$x = 4y$$

$$2x + 3y = 7700$$

$$2(4y) + 3y = 7700$$

$$8y + 3y = 7700$$

$$\frac{11y}{11} = \frac{7700}{11}$$

$$\boxed{y = 700}$$

$$x = 4(700)$$

$$\boxed{x = 2800}$$

They sold 2800 boxes of chocolate and 700 bags of coffee.