Identify the key features of the graph.

Domain: $(-\infty, \infty)$ or

$-\infty < x < \infty$

Range: $[-4, \infty)$ or

$y \geq -4$

X-Intercept: $(-4, 0)$ and $(0, 0)$

y-Intercept: $(0, 0)$

Interval positive: $(-4, \infty)$ ~~and $(0, \infty)$~~

Interval negative $(-4, 0)$

Interval increasing: $(-2, \infty)$

$x > -2$

Interval decreasing: $(-\infty, -2)$, $x < -2$

Rate of change for $(-2, 0)$

Vertex $= (-2, -4)$

Rate of change $= \frac{\Delta y}{\Delta x}$

$= \frac{-4 - 0}{-2 - 2.} \quad \frac{-4}{0} = \infty.$

Problem 1 - Ticket for the baseball game
Cost $3 Per child
or 5 per adult

If $650 worth of ticket were sold and 180 people attended the game.

Equations:

Let Children be x and adult be y

$x + y = 180$ --①

$3x + 5y = 650$ --②

$\Rightarrow 3x + 3y = 540$

$3x + 5y = 650$

$-2y \quad -110$

$-2 \quad -2$

$y = 55$

$x + y = 180$

$x + 55 = 180$

$x = 180 - 55$

$x = 125$

$= 125$ Children.

Problem 2

Nadia has 27 coins that are all dimes and quarters. The value of the coin is $4.35. How many dimes and how many quaters does nadia have?

let d = number of dimes.

let q = the nume of quaters

Equations $d + q = 27$ --(1), $d = 27 - q$

$0.10d + 0.25q = 4.35$ --(2) multiply both sides of this equation by 100 to get rid of the decimal

$10d + 25q = 435$ --(3)

but $d = 27 - q$

$10(27 - q) + 25 = 435$

$270 - 10q + 25q = 435$

$15q = 435 - 270$

$\frac{15q}{15} = \frac{165}{15}$

$q = 11$

$d = 27 - q \Rightarrow 27 - 11 = 16$

$d = 16$

Quatters are 11 and dimes are 16