

# Quiz 3

Key

Show *all* your work algebraically for each and simplify. No credit is given without supporting work. There are *two* sides to this quiz.

1. [3] (§2.1 #13) Find the number  $c$  so that  $(c, 13)$  is on the line containing  $(-4, -17)$  and  $(6, 30)$ .

$$\frac{-17 - 30}{-4 - 6} = \frac{-47}{-10} = 4.7 \quad (+1)$$

$$\begin{array}{r} 4 \\ 4.7 \\ \underline{6} \\ 28.2 \end{array}$$

$$30 = 4.7 \cdot 6 + b$$

$$30 = 28.2 + b$$

$$30 - 28.2 = b$$

$$1.8 = b$$

so  $y = 4.7x + 1.8 \quad (+1)$

we want  $c$  so that

$$13 = 4.7c + 1.8 \quad (+.5)$$

$$13 - 1.8 = 4.7c$$

$$\frac{11.2}{4.7} = \frac{11.2}{4.7} = c \approx 2.38 \quad (+.5)$$

$$\begin{array}{r} 47 \overline{) 2.3829} \\ \underline{1120} \\ 942 \\ \underline{141} \\ 390 \\ \underline{376} \\ 440 \\ \underline{94} \\ 46 \end{array}$$

- [3] Find the vertex of the parabola defined by the rule  $x^2 + 2x - 5$ .

$$y = x^2 + 2x - 5 \quad (+1) \text{ re } (10b)^2$$

$$y + 1 = x^2 + 2x + 1 - 5$$

$$y + 1 = (x + 1)^2 - 5$$

$$y = (x + 1)^2 - 5 - 1$$

$$y = (x + 1)^2 - 6$$

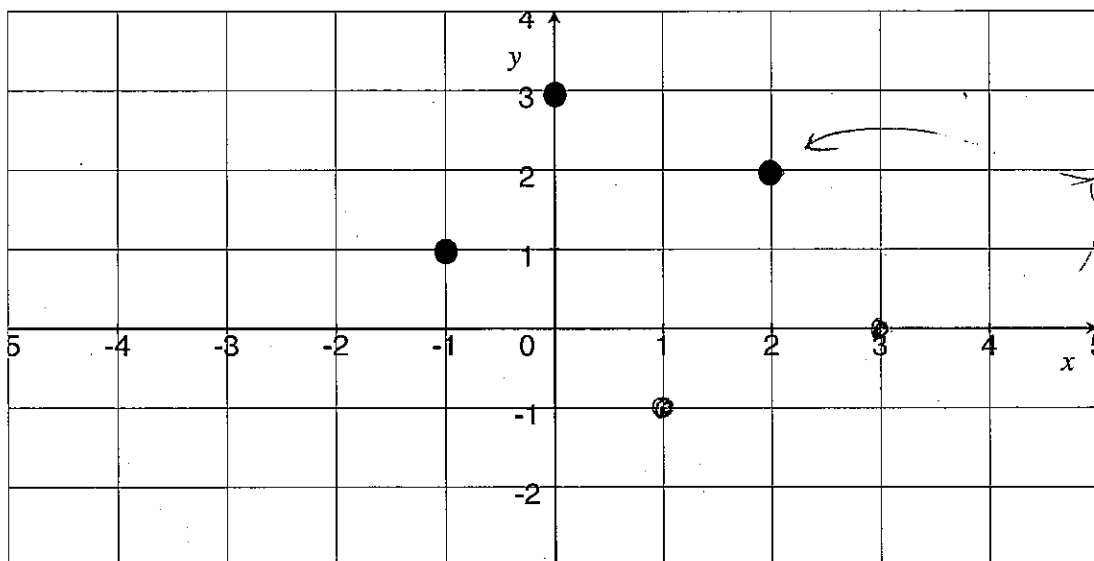
kept balanced  $(+.5)$

vertex is

$(-1, -6)$

signs  $(+.5)$

3. Let  $n$  be the function defined by the following graph:



(a) [1] Does  $n$  have an inverse? Why or why not?

yes or passes the horizontal line test.  
 (+1.5) (+1.5)

(b) [1] If  $n$  does have an inverse, graph  $n^{-1}$ . If  $n$  does not have an inverse, restrict the domain to a new function  $q$  that does have an inverse and then draw  $q^{-1}$ .

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4. [2] (WebHW5 #7) Given that  $f(x) = \frac{x}{x-2}$  is one to one, find  $f^{-1}$ .

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

$$y = \frac{2x}{x-1} \quad \text{alg } (+1)$$

$$x(y-2) = y$$

$$xy - 2x = y$$

$$xy - y = 2x$$

$$y(x-1) = 2x$$