

Show your work neatly, clearly, systematically, and understandably.

1. (8: 1,1,1,1,2,2) Let $f(x) = 3 - 2\sqrt{x+4}$. Find

a. Domain (in interval notation)

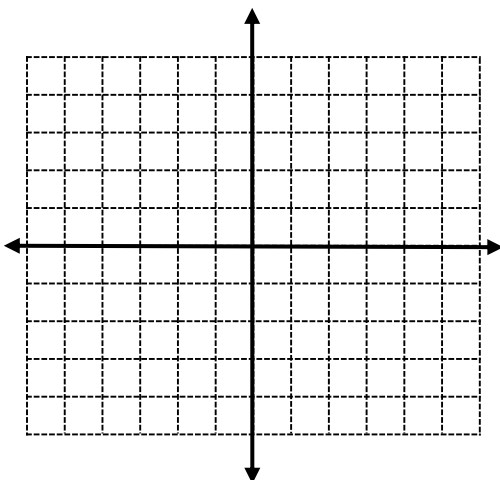
b. Range (in interval notation)

c. "Vertex"

d. Y-intercept

e. X-intercept

f. Graph accurately:



2. (8: 1,1,1,1,2,2) Let $f(x) = -\frac{1}{2}|x-2| + 1$. Find

a. Domain (in interval notation)

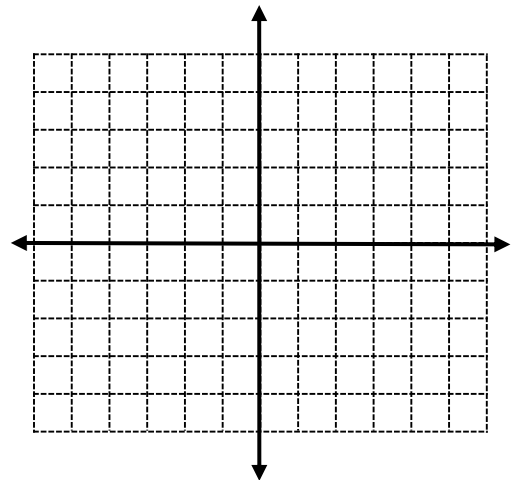
b. Range (in interval notation)

c. Vertex

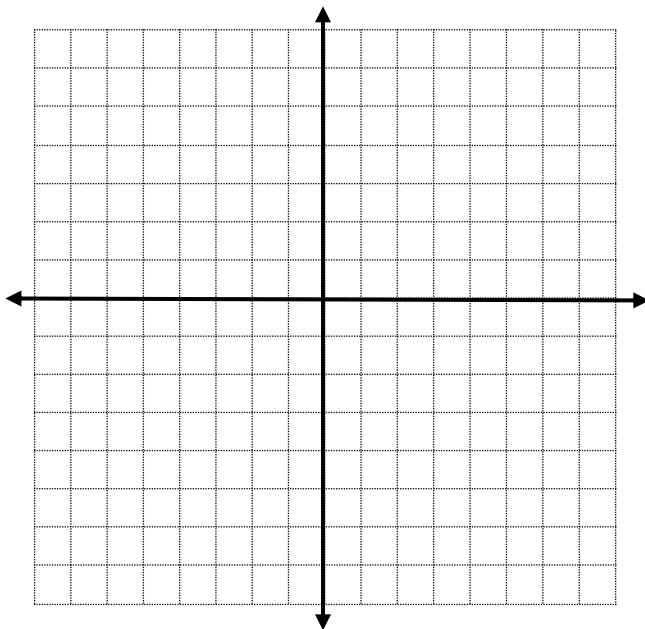
d. Y-intercept

e. X-intercept

f. Graph accurately:



3. (3) Graph: $f(x) = \begin{cases} (x+2)^2 & \text{if } x < 0 \\ -2x+3 & \text{if } 0 \leq x < 3 \\ x-1 & \text{if } x \geq 3 \end{cases}$



4. (3) Find the difference quotient of $f(x) = \frac{2}{2x+3}$.

Note: $DQ_f = \frac{f(x+h) - f(x)}{h}$.

