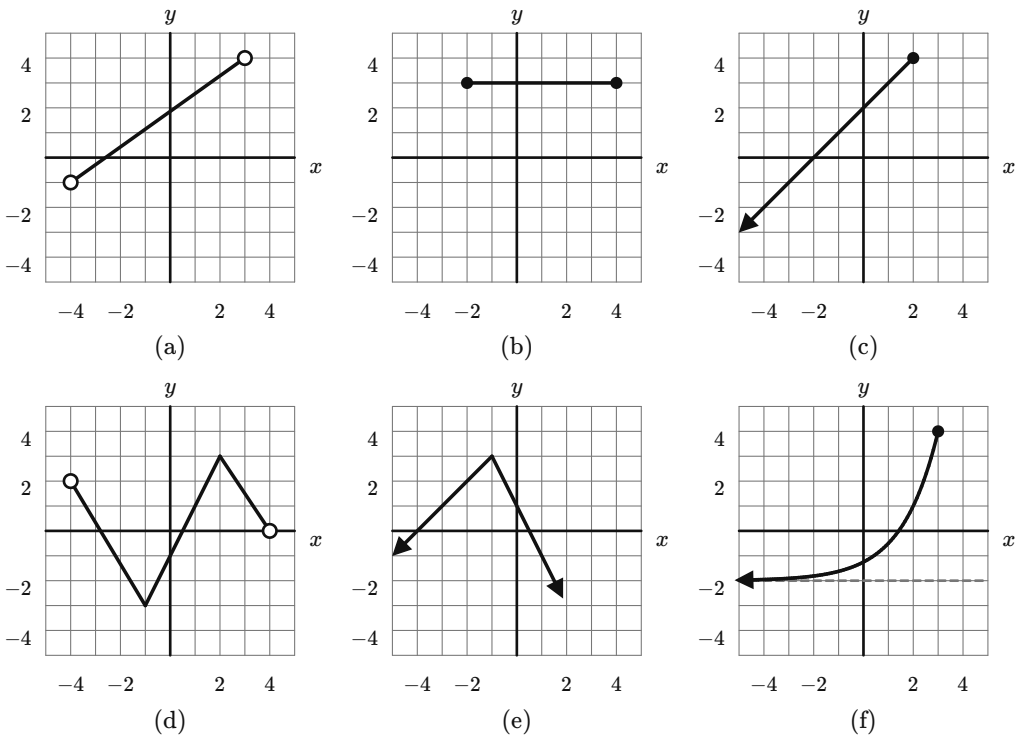
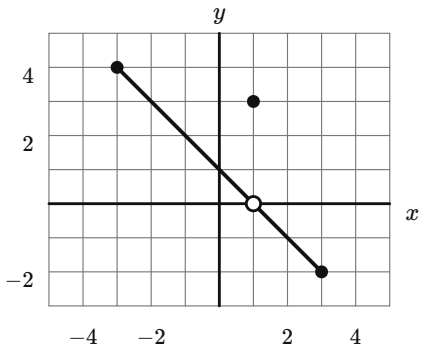
Algebra 2 Unit 1 worksheet: Domain and range from a graph

Name _____ Date _____ Period _____

1. Write the domain and the range of each graph in the figure in interval notation. Every dot and corner sits on a grid point. In (f) the curve flattens out toward the dashed line $y = -2$ as it goes left and never reaches it.



2. The figure shows the graph of a function f: the segment from the closed dot (−3, 4) to the closed dot (3, −2) with the point (1, 0) missing, together with the single closed dot (1, 3).



(a) Is 1 in the domain of f? Explain.

(b) Is 0 in the range? Explain.

(c) Does the closed dot (1, 3) add a new number to the range? Explain.

(d) Write the domain and the range in interval notation.

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3. The graph of a function is a single segment with one closed end and one open end. Its domain is $[-3, 5)$ and its range is $(-1, 7]$. Find the coordinates of both ends of the segment, say which end is the open dot, and say whether the segment rises or falls from left to right.

4. (a) A graph is the circle with center $(1, -2)$ and radius 3. It is not the graph of a function, but its shadows on the axes still give a domain and a range. Find them in interval notation.

(b) The top half of the circle, from the closed dot $(-2, -2)$ over the top to the closed dot $(4, -2)$, is the graph of a function. Find its domain and range.

5. A weather station logs the air temperature T, in degrees Celsius, t hours after midnight. Its graph is made of straight pieces. The first piece runs from the closed dot $(0, -3)$ down to $(4, -6)$ and up to the open dot $(6, -2)$. The station then goes offline for repairs. It starts again at the closed dot $(9, 4)$, and the graph climbs to $(13, 11)$ and falls to the closed dot $(18, 5)$.

(a) Find the domain and range, as inequalities and in interval notation.

(b) What does the gap in the domain mean?

(c) Is 0 in the range? Elena says the air must have been $0°C$ at some moment between hours 6 and 9. Is she right, and does that change your answer about the range? Explain.

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