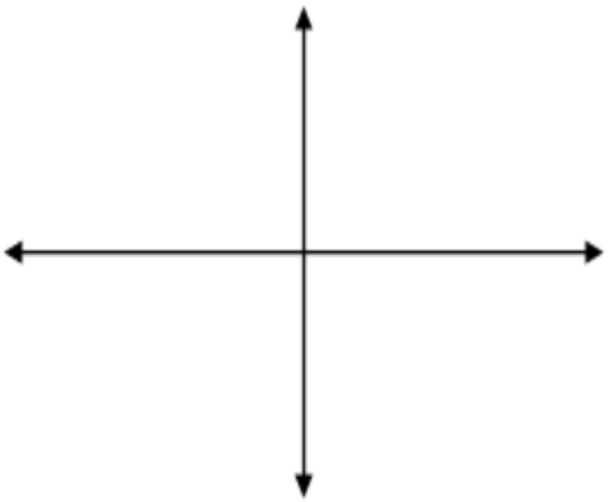
IA 2.7 – Piecewise Functions

Note Title

① a) Graph the piecewise function

$$f(x)=\begin{cases} x-2, & \text{if } x\le 3 \\ -x+3, & \text{if } x>3 \end{cases}$$

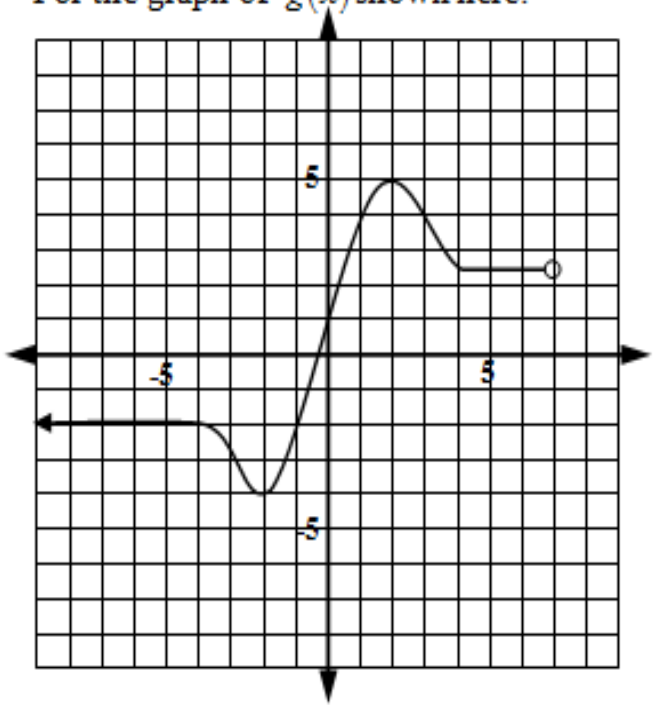


b) For the function

$$f(x)=\begin{cases} 5 & \text{if} \quad x<-2 \\ 3x-1 & \text{if} \quad -2\le x<7 \\ |x-28| & \text{if} \quad x\ge 7 \end{cases}$$

- Compute $f(-2)$.
- Find $f(9)$.
- Evaluate $f(x)$ at $x=-3$.

c) For the graph of $g(x)$ shown here:



- Domain:
- Range:
- Find $g(4)$.
- Solve $g(x)=4$.

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The following is a complicated example, but a very good example of a typical "piecewise function" that you will come across in the real world.

The amount you pay for your medical costs through your medical insurance is according to the following.

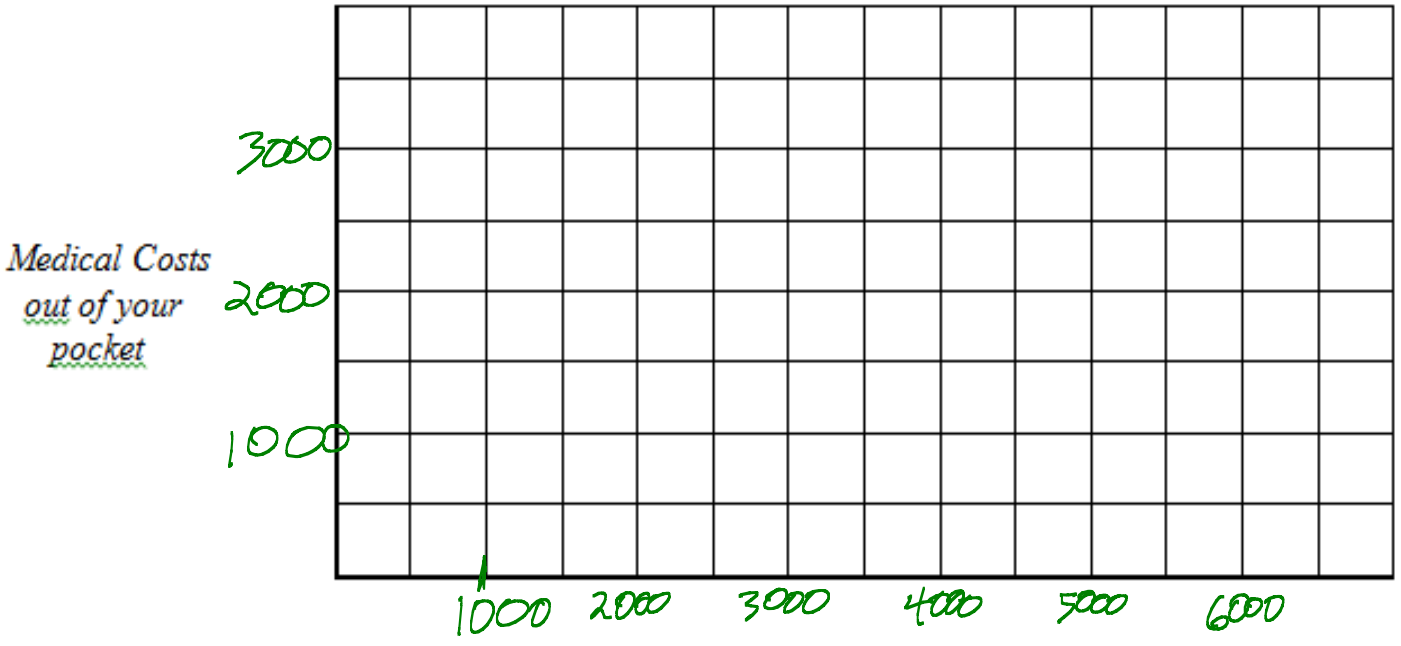
- The first \$500 of medical costs you pay for 100%. (This is a **deductible**.)
- From \$500.01 to \$6,500, you pay **coinsurance** of 25%.
- Beyond \$6,500, you pay no more medical costs.

Create a piecewise function using function notation to represent this, where x is your medical costs incurred, $C(x)$ is your total amount that you pay for the cost.

$$C(x) = \begin{cases} \\ \\ \\ \end{cases}$$

What is the maximum that you could spend on medical costs? (This is the **max out-of-pocket cost**.)

Create a graph of this Piecewise function. Let every tick be \$500.

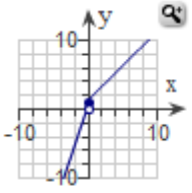


Graph the function.

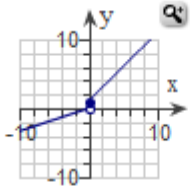
$$f(x) = \begin{cases} 3x, \text{ for } x < 0 \\ x + 1, \text{ for } \geq 0 \end{cases}$$

Choose the correct graph below.

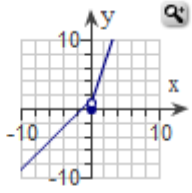
○ A.



○ B.



○ C.



○ D.