

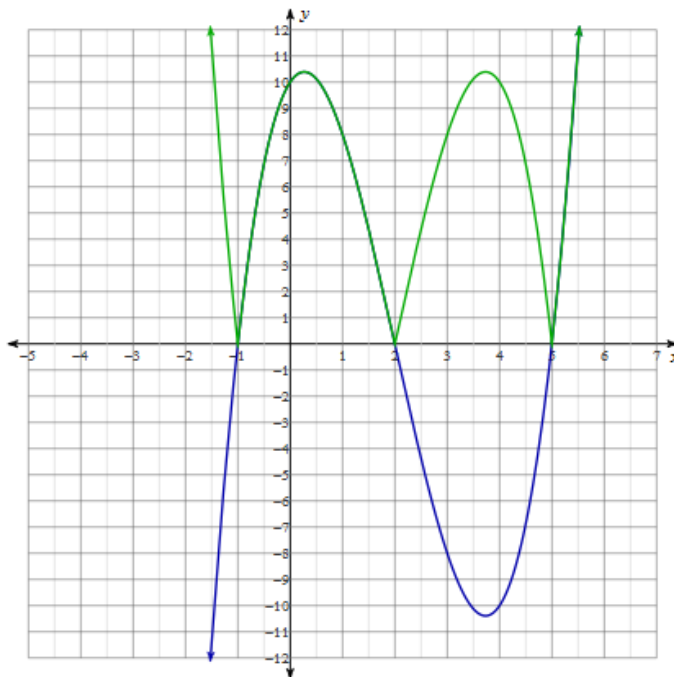
# Function Toolkit #2 – Composition of Functions

Use the Function Toolkit to sketch a graph of each of the following functions on the grid provided. Show all work, calculations, and tables where appropriate. State the domain, range, x- and y-intercepts when requested.

1)  $y = |x^3 - 6x^2 + 3x + 10|$

x-intercepts:  $(-1, 0)$ ,  $(2, 0)$ ,  $(5, 0)$

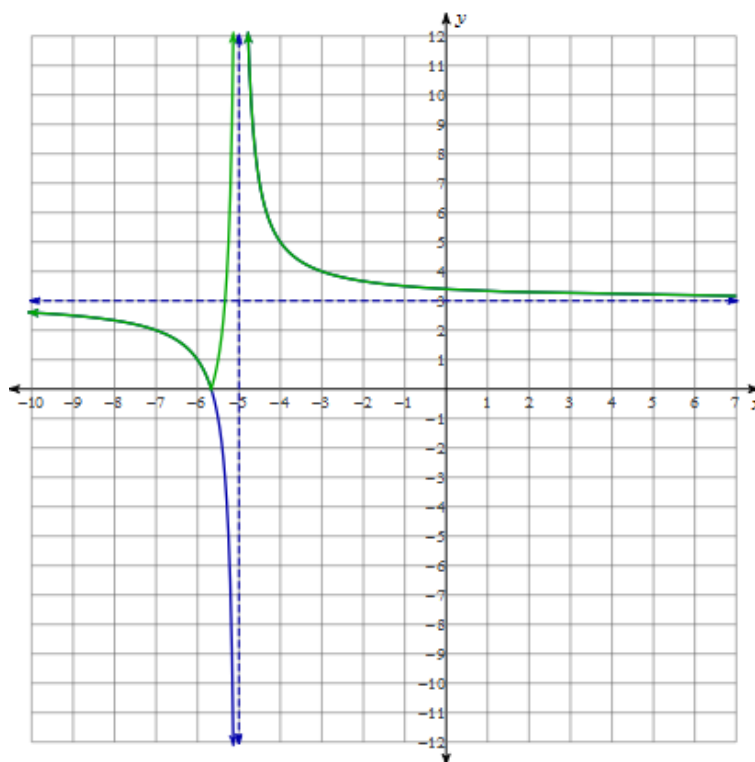
y-intercept:  $(0, 10)$



2)  $f(x) = \left| \frac{2}{x+5} + 3 \right|$

domain:  $x \in \mathbb{R}, x \neq -5$

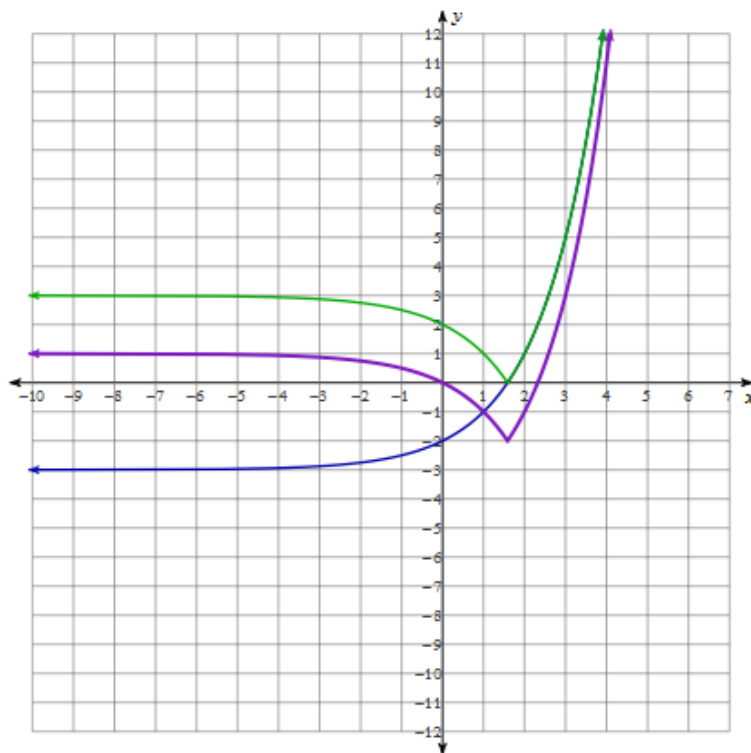
range:  $y \geq 0, y \in \mathbb{R}$



3)  $f(x) = |2^x - 3| - 2$

domain:  $x \in \mathbb{R}$

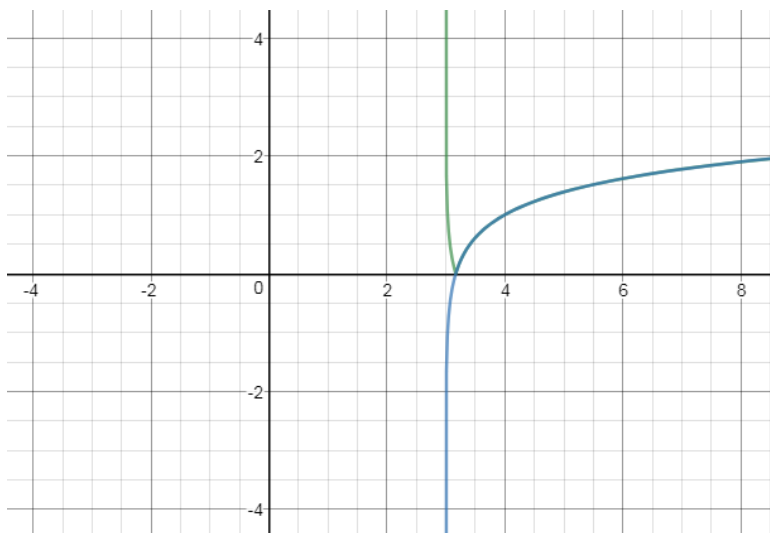
range:  $y \geq -2, y \in \mathbb{R}$



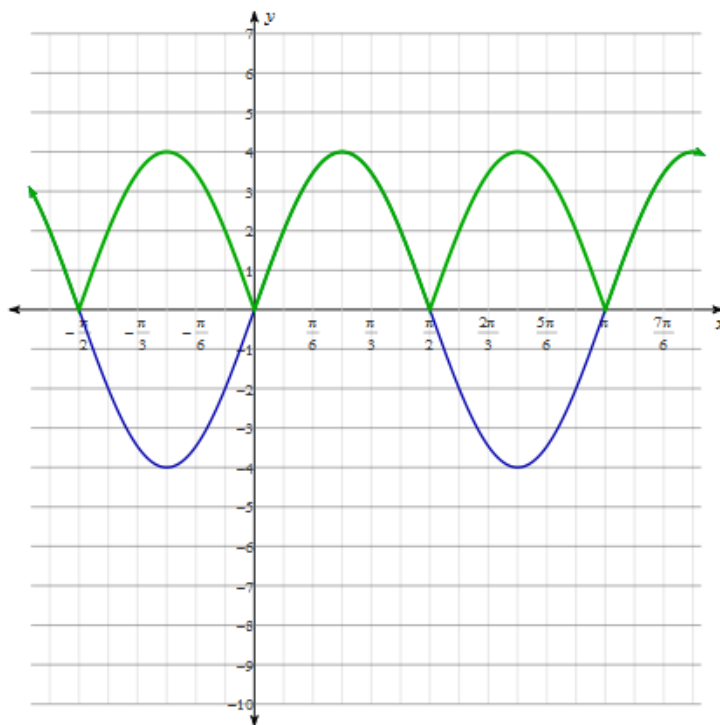
4)  $f(x) = |\log_6(x-3) + 1|$

x-intercept:  $\left(\frac{19}{6}, 0\right)$

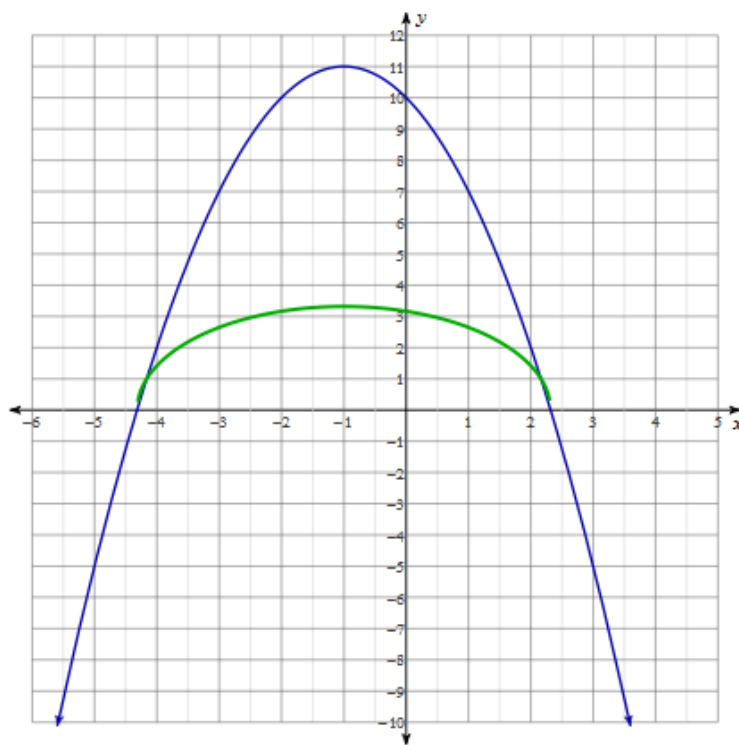
y-intercept: none



5)  $f(x) = |4\sin 2x|$



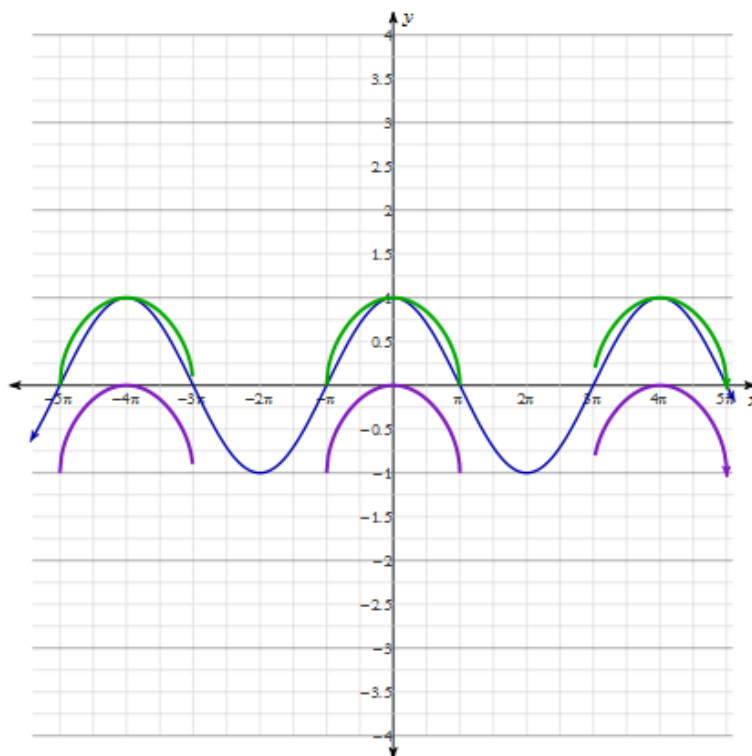
6)  $y = \sqrt{10 - 2x - x^2}$



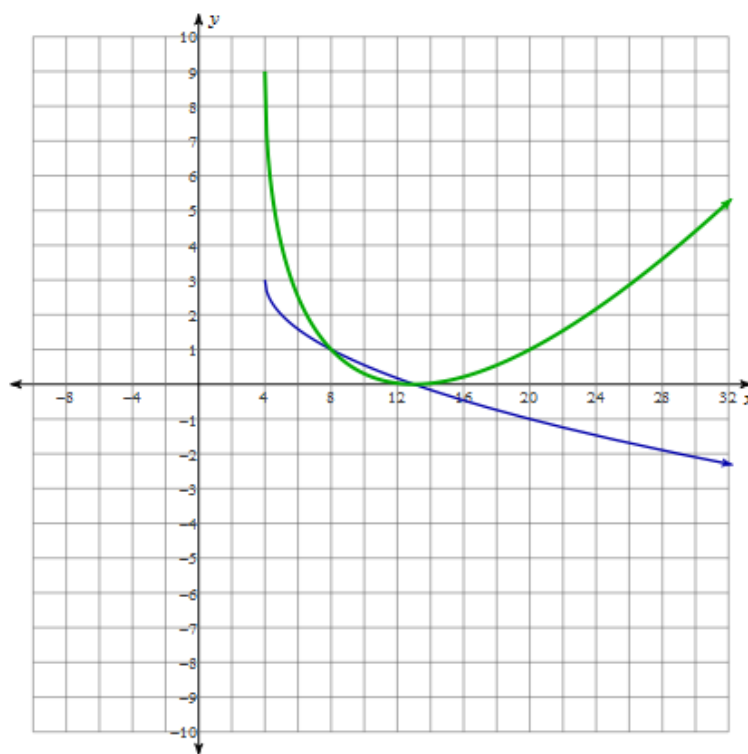
x-intercepts:  $(-1 \pm \sqrt{11}, 0)$

y-intercept:  $(0, \sqrt{10})$

7)  $y = \sqrt{\cos\left(\frac{1}{2}x\right)} - 1$



8)  $f(x) = (3 - \sqrt{x-4})^2$



x-intercept: (13, 0)

y-intercept: none