§ 1.1 # 21 (WebAssign)

$f(x) = \frac{x+7}{x+2}$

$\frac{f(x)-f(3)}{x-3} =$

$= \dfrac{\frac{x+7}{x+2} - \frac{3+7}{3+2}}{x-3}$

$= \dfrac{\frac{x+7}{x+2} - \frac{10}{5}}{\frac{x-3}{1}} = \frac{1}{x-3}\left(\frac{x+7}{x+2} - \frac{2}{1}\cdot\frac{(x+2)}{(x+2)}\right)$

$= \frac{1}{x-3}\left(\frac{x+7-2(x+2)}{x+2}\right) = \left(\frac{x+7-2x-4}{x+2}\right)\left(\frac{1}{x-3}\right)$

$= \left(\frac{-x+3}{x+2}\right)\left(\frac{1}{x-3}\right) = \left(\frac{-(x-3)}{x+2}\right)\left(\frac{1}{x-3}\right) = \boxed{\frac{-1}{x+2}}$

$\frac{f(x+h)-f(x)}{h}$

OR

$\frac{f(x)-f(c)}{x-c}$

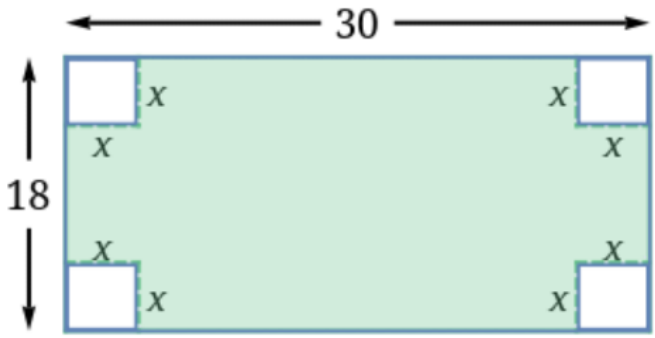
where

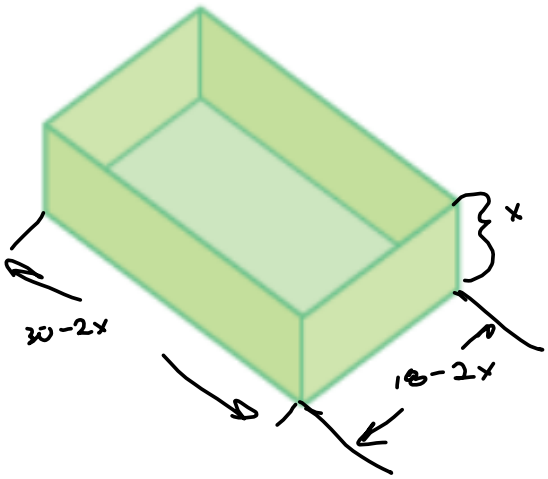
$x+h$ is x

& c is x

Grade Reports will be sent to you, later today.

Writing Project #0? We'll talk about that, tomorrow.





$\Rightarrow$ Volume is

$x(30-2x)(18-2x)$

$= H(L)(W)$

$$4x^3 - 96x^2 + 540x$$

(Copy-Paste from Maple Computer Algebra System, because I'm lazy and insecure.

Section 1.3 - Transformations of Functions

$f(x)$

$2f(x)$

$f(bx)$

$f(x+c)$

$f(x)+d$

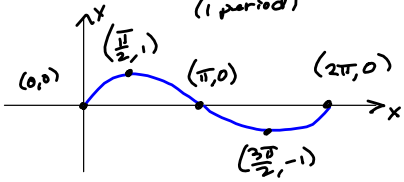
$\Big\} \; 2f(bx+c)+d$

$f(x) = \sin(x) \Longrightarrow$

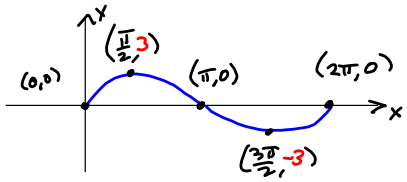
$3f\left(\frac{\pi}{6}x + \frac{7\pi}{6}\right) + 11 = 3\sin\left(\frac{\pi}{6}x + \frac{7\pi}{6}\right) + 11$

steps:

$f(x) = \sin(x)$ (1 period)



$3f(x) = 3\sin(x)$: $y \mapsto 3y$

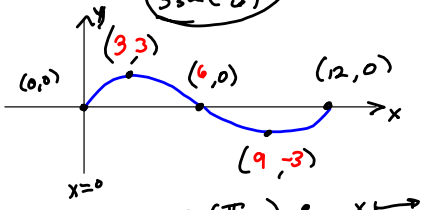


$3\sin\left(\frac{\pi}{6}(x+7)\right) + 11$

$\frac{\pi}{6}x + \frac{7\pi}{6} = \frac{\pi}{6}(x+7)$

$\frac{\frac{7\pi}{6}}{\frac{\pi}{6}} = \frac{7\pi}{6}\cdot\frac{6}{\pi} = 7$

$3\sin\left(\frac{\pi}{6}x\right)$



$\frac{\frac{\pi}{2}}{\frac{\pi}{6}} = \frac{\pi}{2}\cdot\frac{6}{\pi} = 3$

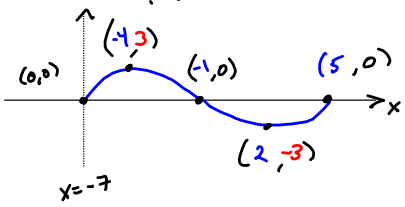
$\frac{3\pi}{2}\cdot\frac{6}{\pi} = 9$

$f\left(\frac{\pi}{6}x\right)$: $x \mapsto \frac{1}{\frac{\pi}{6}}x$

$f(bx)$: $x \mapsto \frac{1}{b}x$

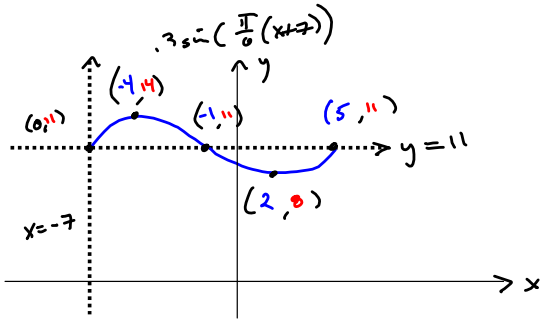
$3\sin\left(\frac{\pi}{6}(x+7)\right)$

$f(x+7)$: $x \mapsto x-7$



$3f\left(\frac{\pi}{6}(x+7)\right) + 11 = 3\sin\left(\frac{\pi}{6}(x+7)\right) + 11$: $y \mapsto y+11$

$3\sin\left(\frac{\pi}{6}(x+7)\right)$



If graphing by transforming is foreign to you, I have some stuff on the College Algebra website that talks about this:

It's on harryzaims.com, right above our class!

Writing Project #2 for College Algebra is where this skill is covered.

College Trig Approach to trig functions, in particular....