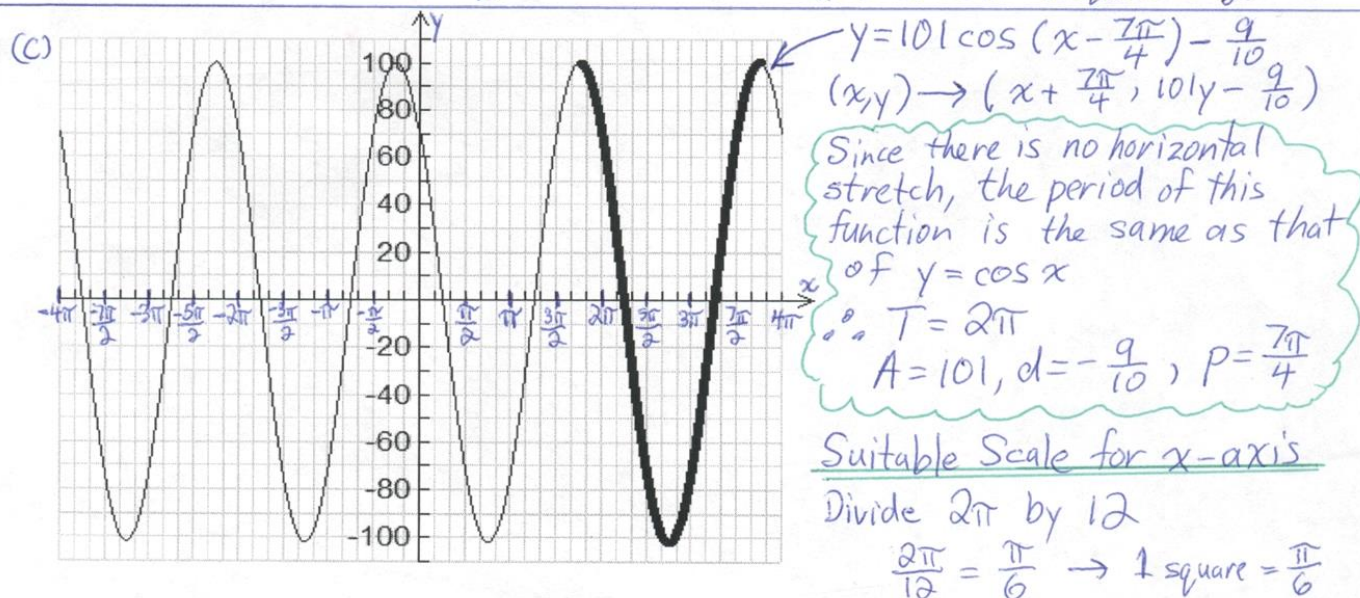
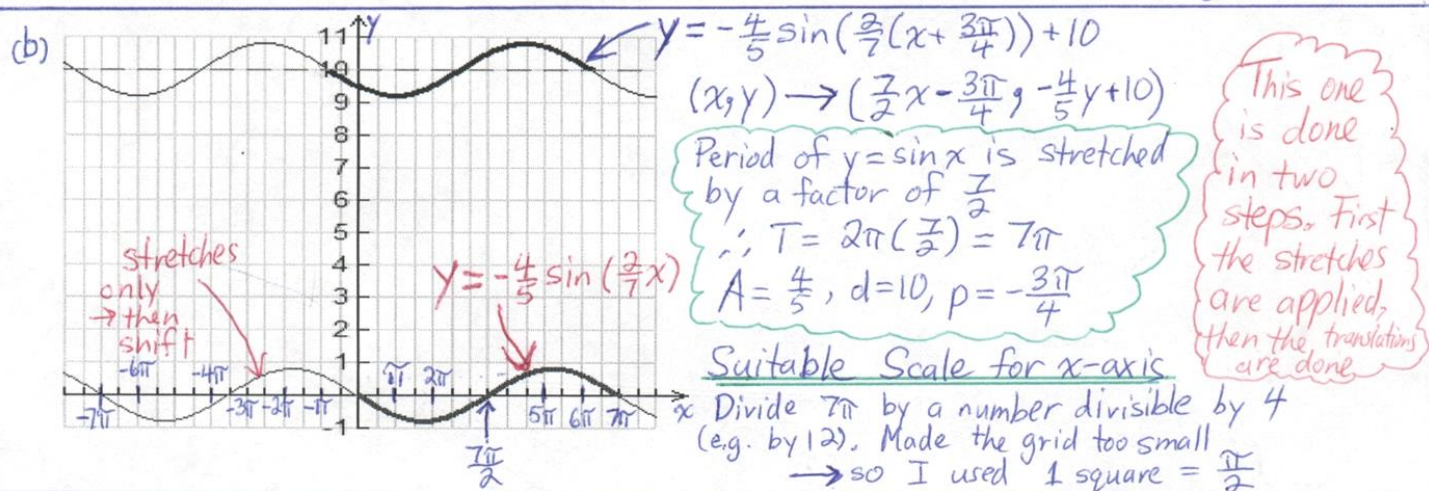
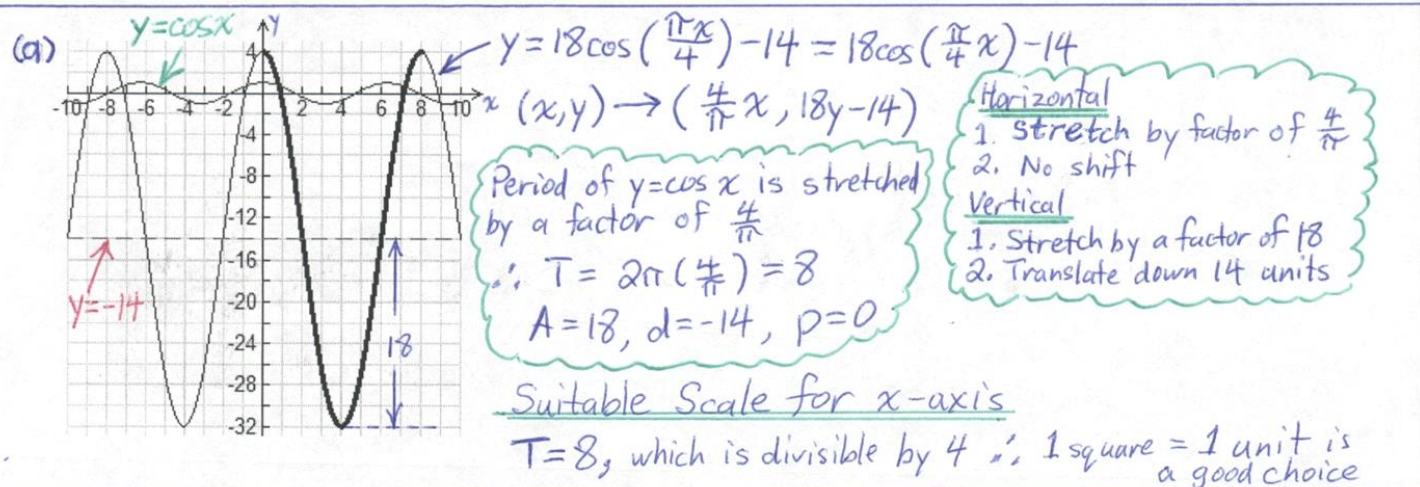
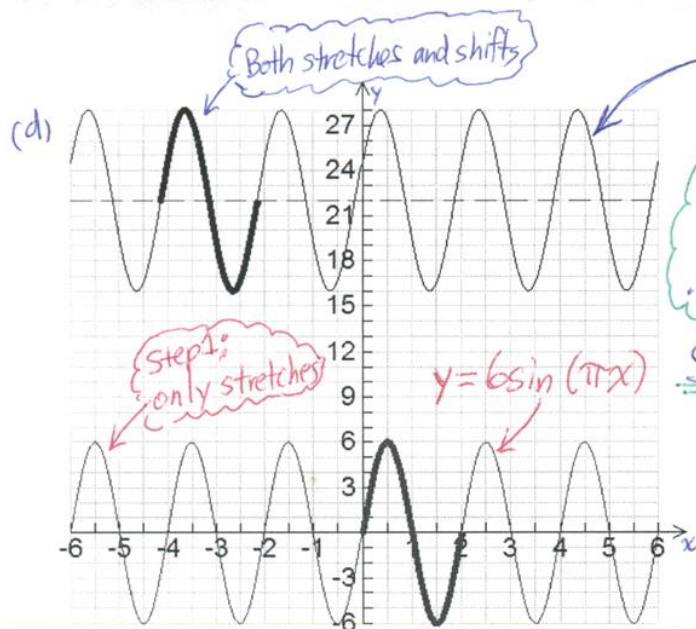


SOLUTIONS – “GRAPHING EXERCISES” IN “TRANSFORMATIONS OF TRIGONOMETRIC FUNCTIONS”







$$y = 6\sin(\pi x + 13) + 22 = 6\sin(\pi(x + \frac{13}{\pi})) + 22$$

$$(x, y) \rightarrow (\frac{1}{\pi}x - \frac{13}{\pi}, 6y + 22)$$

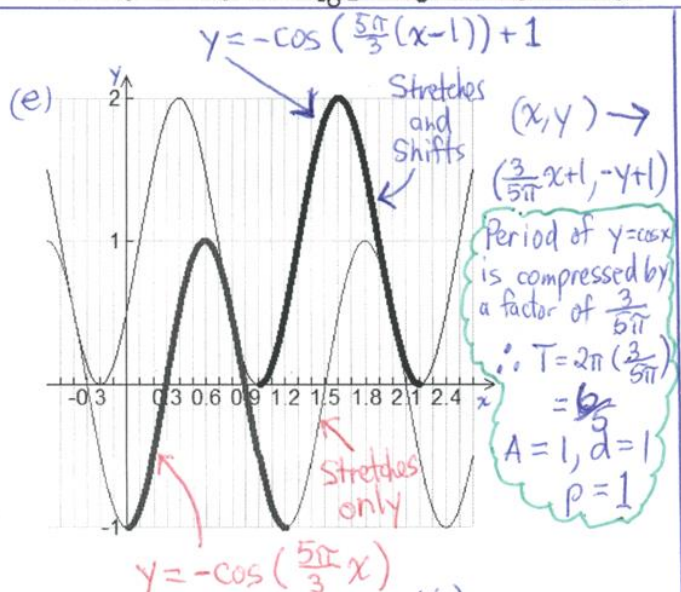
Period of  $y = \sin x$  is compressed by a factor of  $\frac{1}{\pi}$

$$\therefore T = 2\pi(\frac{1}{\pi}) = 2, A = 6, d = 22, p = -\frac{13}{\pi}$$

Suitable Scale for x-axis

$T = 2 \rightarrow$  Divide 2 units into equal parts by a number divisible by 4. I used  $\frac{2}{4} = \frac{1}{2}$

$$\therefore 1 \text{ square} = \frac{1}{2}$$



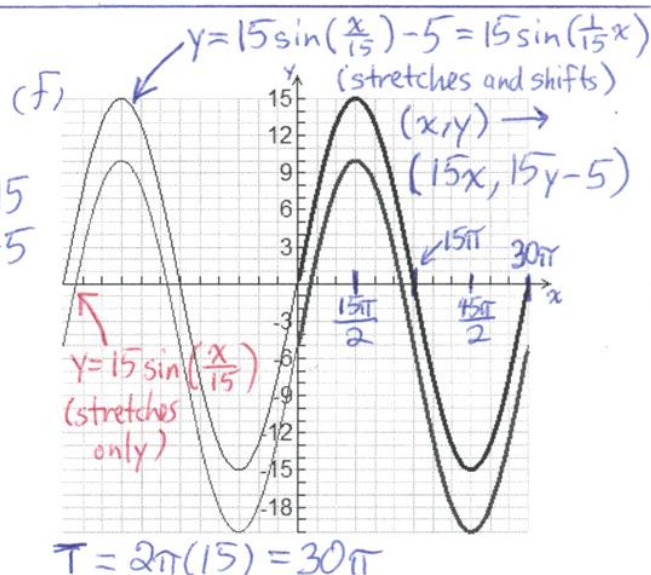
$$(x, y) \rightarrow (\frac{3}{5\pi}x + 1, -y + 1)$$

Period of  $y = \cos x$  is compressed by a factor of  $\frac{3}{5\pi}$

$$\therefore T = 2\pi(\frac{3}{5\pi}) = \frac{6}{5}$$

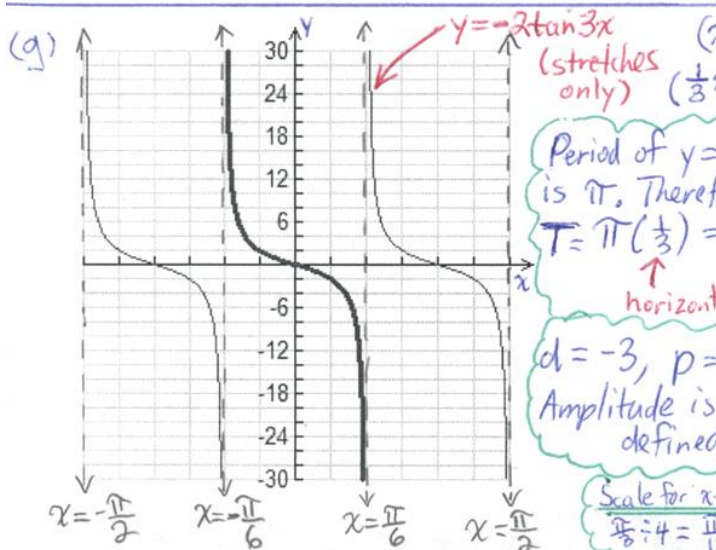
$A = 1, d = 1, p = 1$

Suitable Scale for x-axis:  $\frac{(\frac{6}{5})}{12} = \frac{6}{5} \times \frac{1}{12} = \frac{1}{10} = 0.1$



$$T = 2\pi(15) = 30\pi$$

Suitable Scale for x-axis:  $\frac{30\pi}{12} = \frac{5\pi}{2} = 2.5\pi$



Period of  $y = \tan x$  is  $\pi$ . Therefore,

$$T = \pi(\frac{1}{3}) = \frac{\pi}{3}$$

horizontal compression

$d = -3, p = -\frac{\pi}{4}$

Amplitude is not defined

Scale for x-axis:  $\frac{\pi}{3} \div 4 = \frac{\pi}{12}$

