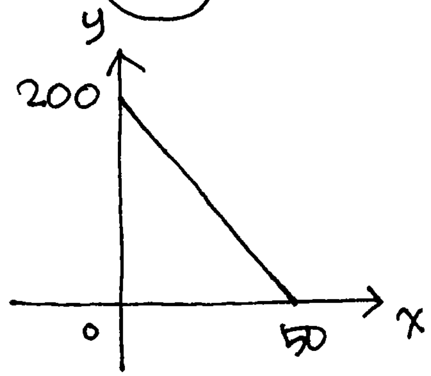
P36 #8.

a)



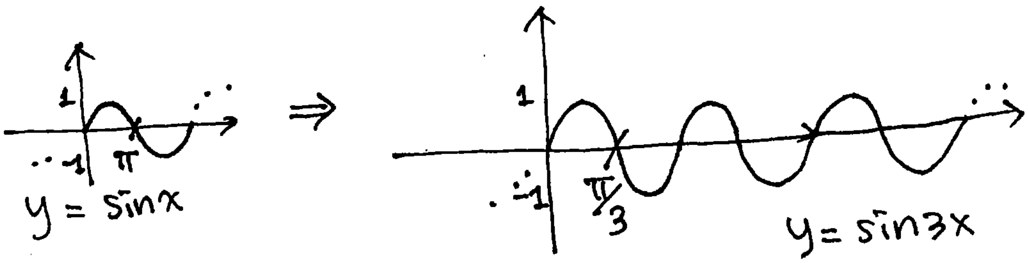
b) The ① slope of -4 means that for each increase of 1 dollar for a rental space, the number of spaces rented decrease by 4.

② y-intercept : the # of spaces that occupied if there were no charge for each space.

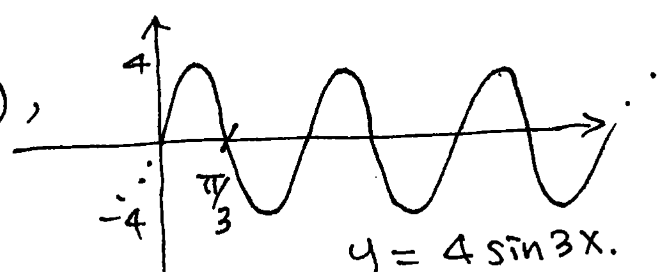
③ x-intercept : the smallest rental fee that results in no spaces rented.

P46 #14. $y = 4\sin 3x$

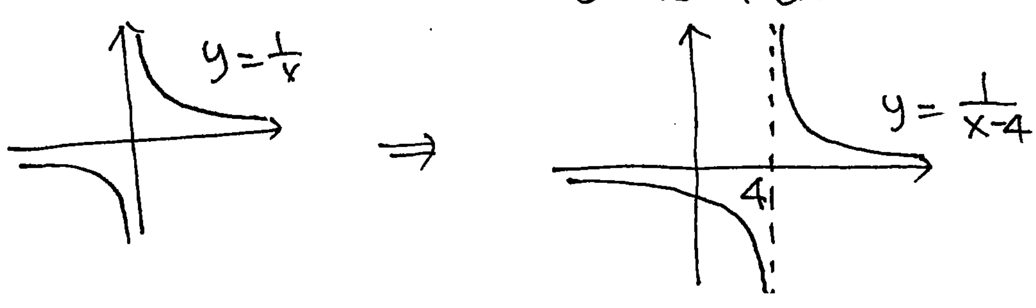
Start w/ the graph of $y = \sin x$, compress horizontally by a factor 3, and then stretch vertically by a factor of 4.



⇒ finally,



#16 $y = \frac{1}{x-4}$: Start w/ the graph of $y = \frac{1}{x}$ and shift 4 units to the right.



(#36) $f(x) = 1 - x^3$, $D = \mathbb{R}$

$g(x) = \frac{1}{x}$, $D = \{x \mid x \neq 0\}$

$(f \circ g)(x) = f(g(x)) = f\left(\frac{1}{x}\right) = 1 - \left(\frac{1}{x}\right)^3 = 1 - \frac{1}{x^3}$, $D = \{x \mid x \neq 0\}$

$(g \circ f)(x) = g(f(x)) = g(1 - x^3) = \frac{1}{1 - x^3}$, $D = \{x \mid 1 - x^3 \neq 0\}$

$= \{x \mid (1 - x)(1 + x + x^2) \neq 0\}$

$= \{x \mid x \neq 1\}$

$(f \circ f)(x) = f(f(x)) = f(1 - x^3) = 1 - (1 - x^3)^3$, $D = \mathbb{R}$

$(g \circ g)(x) = g(g(x)) = g\left(\frac{1}{x}\right) = \frac{1}{\left(\frac{1}{x}\right)} = x$, $D = \{x \mid x \neq 0\}$ because 0 is not in the domain of g.

(#46) Let $g(x) = \sqrt{x}$ and $f(x) = \sin x$

Then $(f \circ g)(x) = f(g(x)) = \sin(\sqrt{x}) = F(x)$

P69 (#8) AV between times $t = 2$ and $t = 2 + h$ is given by $\frac{s(2+h) - s(2)}{h}$

a) i) $h = 3 \Rightarrow V_{av} = \frac{s(5) - s(2)}{5 - 2} = \frac{178 - 32}{3} = \frac{146}{3} \approx 48.7$ ft/s

ii) $h = 2 \Rightarrow V_{av} = \frac{s(4) - s(2)}{4 - 2} = \frac{119 - 32}{2} = \frac{87}{2} = 43.5$ ft/s

iii) $h = 1 \Rightarrow V_{av} = \frac{s(3) - s(2)}{3 - 2} = \frac{70 - 32}{1} = 38$ ft/s

b) Using the pts $(0.8, 0)$ and $(5, 118)$ from the approximate tangent line, the instantaneous velocity at $t = 2$ is about $\frac{118 - 0}{5 - 0.8} \approx 28$ ft/s