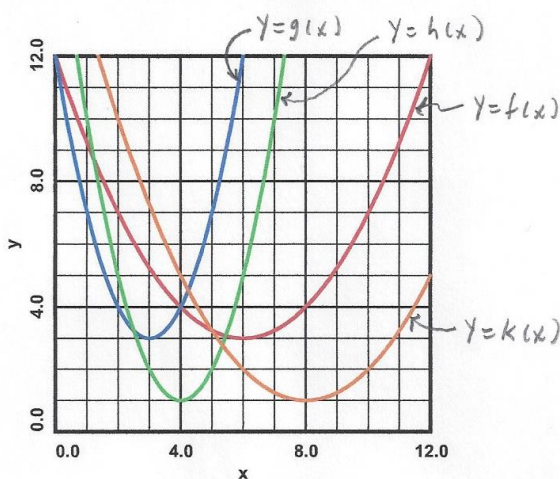


PRE-AP ALGEBRA 2

1) For $y = f(x) = \frac{1}{4}x^2 - 3x + 12$:

- Graph $y = f(x)$ on the axes provided.
- Construct a function $y = g(x)$, which is a horizontal compression, by a factor of $\frac{1}{2}$, of $y = f(x)$.
- Graph $y = g(x)$ on the axes provided.
- Construct a function $y = h(x)$, which is a translation, by $(1, -2)$, of $y = g(x)$.
- Graph $y = h(x)$ on the axes provided.



$$\begin{aligned} (b) \quad g(x) &= f(2x) = \frac{1}{4}(2x)^2 - 3(2x) + 12 = \\ &= \frac{1}{4}(4x^2) - 6x + 12 = \\ &= x^2 - 6x + 12 \end{aligned}$$

$$\begin{aligned} (d) \quad h(x) &= g(x-1) - 2 = \\ &= (x-1)^2 - 6(x-1) + 12 - 2 = \\ &= (x^2 - 2x + 1) + (-6x + 6) + 12 - 2 = \\ &= x^2 - 8x + 17 \end{aligned}$$

2A.6 CLASSWORK

2) In problem 1, the transformation of $y = f(x)$ to $y = h(x)$ is equivalent to:

- Construct a function $y = k(x)$, which is a translation, by $(2, -2)$, of $y = f(x)$.
- Graph $y = k(x)$ on the axes in problem 1.
- Construct $y = h(x)$ from problem 1 by applying a horizontal compression, by a factor of $\frac{1}{2}$, to $y = k(x)$.

$$\begin{aligned} (a) \quad k(x) &= f(x-2) - 2 = \\ &= \frac{1}{4}(x-2)^2 - 3(x-2) + 12 - 2 = \\ &= \frac{1}{4}(x^2 - 4x + 4) - 3(x-2) + 12 - 2 = \\ &= \left(\frac{1}{4}x^2 - x + 1\right) + (-3x + 6) + 12 - 2 = \\ &= \frac{1}{4}x^2 - 4x + 17 \end{aligned}$$

$$\begin{aligned} (c) \quad h(x) &= k(2x) = \frac{1}{4}(2x)^2 - 4(2x) + 17 = \\ &= \frac{1}{4}(4x^2) - 8x + 17 = \\ &= x^2 - 8x + 17 \end{aligned}$$