

PRE-AP ALGEBRA 2

- 1) For $f(x) = x^2 - 7x + 5$ and $g(x) = 3x + 11$, calculate

- a) $f(g(x))$
- b) $g(f(x))$
- c) $f(g(3))$
- d) $g(f(3))$

$$\begin{aligned} \text{a) } f(g(x)) &= f(g) = g^2 - 7g + 5 = \\ &= (3x+11)^2 - 7(3x+11) + 5 = \\ &= (9x^2 + 66x + 121) + (-21x - 77) + 5 = \\ &= 9x^2 + 45x + 49 \end{aligned}$$

$$\begin{aligned} \text{b) } g(f(x)) &= g(f) = 3f + 11 = \\ &= 3(x^2 - 7x + 5) + 11 = \\ &= 3x^2 - 21x + 15 + 11 = \\ &= 3x^2 - 21x + 26 \end{aligned}$$

$$\begin{aligned} \text{c) } f(3) &= 20 \\ f(g(3)) &= f(20) = 265 \end{aligned}$$

$$\begin{aligned} \text{d) } f(3) &= -7 \\ g(f(3)) &= g(-7) = -10 \end{aligned}$$

2A.3 CLASSWORK

- 2) Let

$e \equiv$ E.U. shoe size

$m \equiv$ U.S. men's shoe size

$w \equiv$ U.S. women's shoe size

where the conversions are

$$w(e) = \frac{1}{28}(22e - 633)$$

$$e(m) = \frac{1}{22}(28m + 675)$$

Calculate $w(e(m)) = w(m)$ and state its meaning.

$$\begin{aligned} w(e(m)) &= \frac{1}{28} \left[22 \left\{ \frac{1}{22} (28m + 675) \right\} - 633 \right] \\ &= \frac{1}{28} [28m + 675 - 633] \\ &= \frac{1}{28} [28m + 42] = m + 1.5 \end{aligned}$$

Add 1.5 to the U.S. men's shoe size to get the U.S. women's shoe size