

Review

1) Study the following function:

$$f(x) = -3(x-2)^2 + 147$$

$$\text{dom } f: \mathbb{R}$$

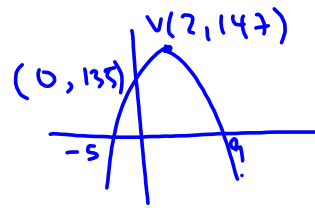
$$\text{ran } f: ]-\infty, 147]$$

$$\text{y-int: } (0, 135)$$

$$\text{zeros: } \{-5, 9\}$$

$$\text{variation: } f \uparrow ]-\infty, 2]$$

$$\text{Sign: } f(x) \geq 0 : [-5, 9]$$



$$f \searrow \text{ over } [2, \infty[$$

$$f(x) \leq 0 ]-\infty, -5] \cup [9, \infty[$$

Evaluate: a)  $f(x) = 30$   
 b)  $f(-4) = ?$

$$a) 30 = -3(x-2)^2 + 147$$

$$\frac{-117}{-3} = \frac{-3(x-2)^2}{-3}$$

$$+39 = (x-2)^2$$

$$\pm\sqrt{39} = x-2$$

$$6.24 = x-2 \quad -6.24 = x-2$$

$$8.24 = x \quad -4.24 = x$$

$$\{-4.24, 8.24\}$$

$$b) f(-4) = ?$$

$$\begin{aligned} f(-4) &= -3(-4-2)^2 + 147 \\ &= 39 \checkmark \end{aligned}$$