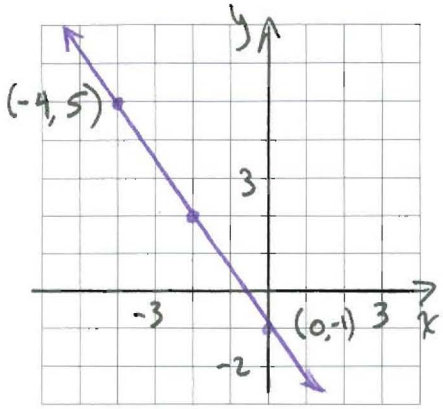
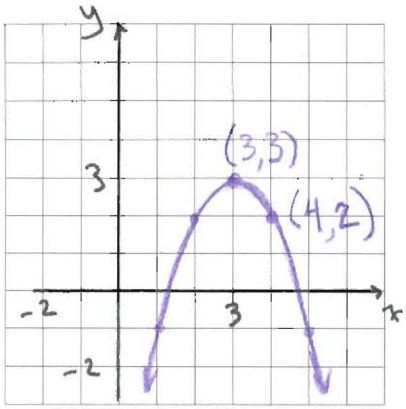
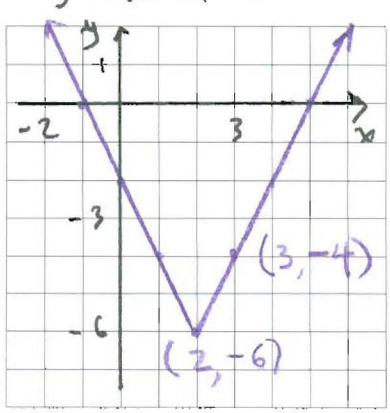
1. (a) $y = \frac{-3}{2}(x+4)+5$



(b) $y = -(x-3)^2+3$



(c) $y = 2|x-2|-6$



2. (a) $\frac{(x^2-4)(x^2+4x+3)}{(x+3)(2x-4)} = \frac{(x+2)(x-2)(x+3)(x+1)}{(x+3)(2)(x-2)} = \frac{x^2+3x+2}{2}$.

(b) $\frac{(4x-8)}{(x^2-3x+2)} \cdot \frac{(x-1)}{(3x-6)} = \frac{4(x-2)(x-1)}{(x-1)(x-2)(3)(x-2)} = \frac{4}{3x-6}$.

(c) $\frac{3x}{x^2-10x+21} + \frac{5}{x-3} = \frac{3x(x-3)+5(x^2-10x+21)}{(x^2-10x+21)(x-3)} = \frac{3x(x-3)+5(x-3)(x-7)}{(x-3)(x-7)(x-3)}$

$= \frac{3x+5x-35}{x^2-10x+21}$

$= \frac{8x-35}{x^2-10x+21}$

3. (a) $\frac{4x}{x+3} = \frac{37}{x^2-9} - 3$

$(x+3)\left(\frac{4x}{x+3}\right) = \left(\frac{37-3(x^2-9)}{(x+3)(x-3)}\right)(x+3)$

$(x-3)(4x) = \left(\frac{37-3(x^2-9)}{x-3}\right)(x-3)$

$4x^2-12x = 37-3x^2+27$

$7x^2-12x-64 = 0$

$\rightarrow x = \frac{12 \pm \sqrt{1936}}{14} = 4$ OR $-\frac{16}{7}$ ✓ ✓