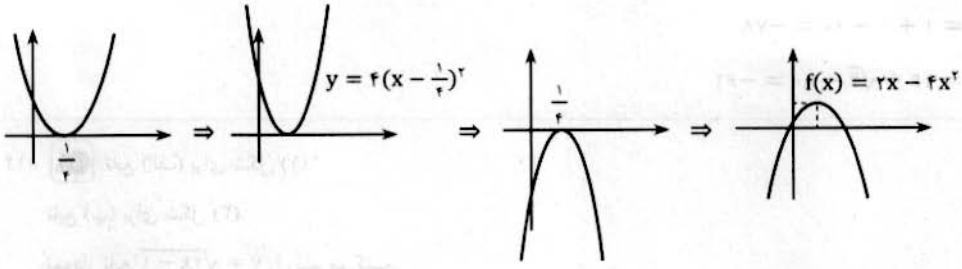
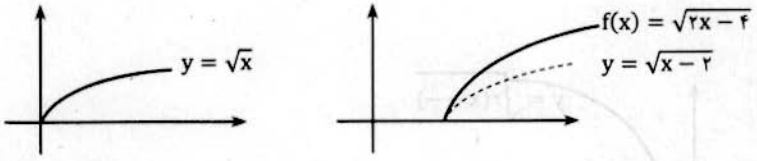
۱۱-

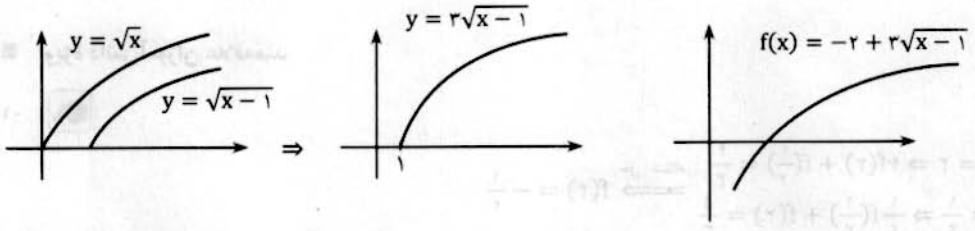
الف) $f(x) = -۴x^۲ + ۲x = -۴(x^۲ - \frac{x}{۲}) = -۴((x - \frac{۱}{۴})^۲ - \frac{۱}{۱۶}) = -۴(x - \frac{۱}{۴})^۲ + \frac{۱}{۴}$



ب) $f(x) = \sqrt{۲(x - ۲)} = \sqrt{۲}\sqrt{x - ۲}$



پ) $f(x) = -۲ + ۳\sqrt{x - ۱}$



۱۲-

الف) $\frac{f(x)-f(a)}{x-a} = \frac{\frac{۳x-۱}{x+۲} - \frac{۳a-۱}{a+۲}}{x-a} = \frac{\frac{(۳x-۱)(a+۲)-(۳a-۱)(x+۲)}{(x+۲)(a+۲)}}{x-a}$

$= \frac{۳ax+۶x-a-۲-(۳ax+۶a-x-۲)}{(x-a)(x+۲)(a+۲)} = \frac{۷x-۷a}{(x-a)(x+۲)(a+۲)} = \frac{۷}{(x+۲)(a+۲)}$

ب) $\frac{f(۱+h)-f(۱)}{h} = \frac{\frac{۳(۱+h)-۱}{۱+h+۲} - \frac{۲}{۳}}{h} = \frac{۹(۱+h)-۳-۲(h+۳)}{۳h(h+۳)} = \frac{۷h}{۳h(h+۳)} = \frac{۷}{۳h+۹}$