Answer on Question #61369 – Math – Calculus

Question

3) Given that $f(x)=2x^2-3x+5$, evaluate $(f(x+\Delta x)- f(x))/\Delta x$

a) $2x-1+\Delta x$

b) $-2x-3+\Delta x$

c) $2x-2+\Delta x$

d) $4x-3+2\Delta x$

Solution

$$\frac{f(x+\Delta x)-f(x)}{\Delta x}=\frac{2(x+\Delta x)^2-3(x+\Delta x)+5-2x^2+3x-5}{\Delta x}=$$

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

Answer: d) $4x-3+2\Delta x$.

Question

4) Let $f(x)=x^2+2$ and $g(x)=x^2+3$. Find the composite function $f(g(x))$

a) x^2+4x^2+6

b) x^4+6x^2+11

c) x^4-3x^2+6

d) x^2-3x^2+8

Solution

$$\boldsymbol{f\big(g(x)\big)=f(x^2+3)=(x^2+3)^2+2=x^4+6x^2+11.}$$

Answer: b) x^4+6x^2+11.