

5. Which of the following are correct calculations for difference quotient of:

$$m(n) = 4n^2 + 4n + 4$$

$$m(n) = 4n^2 + 4n + 4$$

$$m(n+h) = 4(h+n)^2 + 4(h+n) + 4$$

$$= 4h^2 + 8hn + 4h + 4n^2 + 4n + 4$$

$$\frac{m(n+h) - m(n)}{h} = \frac{(4h^2 + 8nh + 4h + 4n^2 + 4n + 4) - (4(n+1)^2 + 4(n+1) + 4)}{h}$$

$$= \frac{4h^2 + 8nh + 4h}{h}$$

$$= \frac{h(4h + 8n + 4)}{h}$$

$$= 4h + 8n + 4$$

$$m(n) = 4n^2 + 4n + 4$$

$$m(n+h) = 4(h+n)^2 + 4(h+n) + 4$$

$$= 4h^2 + 8hn + 12h + 4n^2 + 12n + 12$$

$$\frac{m(n+h) - m(n)}{h} = \frac{(4h^2 + 8nh + 12h + 4n^2 + 12n + 12) - (4n^2 + 4n + 4)}{h}$$

$$= \frac{4h^2 + 8nh + 4h}{h}$$

$$= \frac{h(4h + 8n + 4)}{h}$$

$$= 4h + 8n + 4$$

$$m(n) = 4n^2 + 4n + 4$$

$$m(n+h) = 4(h+n)^2 + 4(h+n) + 4$$

$$= 4h^2 + 8hn + 4h + 4n^2 + 4n + 4$$

$$\frac{m(n+h) - m(n)}{h} = \frac{(4h^2 + 8nh + 4h + 4n^2 + 4n + 4) - (4n^2 + 4n + 4)}{h}$$

$$= \frac{4h^2 + 8nh + 4h}{h}$$

$$= \frac{h(4h + 8n + 4)}{h}$$

$$= 4h + 8n + 4$$

$$m(n) = 4n^2 + 4n + 4$$

$$m(n+h) = 4(h+n)^2 + 4(h+n) + 4$$

$$= 4h^2 + 8hn - 4h + 4n^2 - 4n + 4$$

$$\frac{m(n+h) - m(n)}{h} = \frac{(4h^2 + 8nh + 20h + 4n^2 + 20n + 28) - (4n^2 + 4n + 4)}{h}$$

$$= \frac{4h^2 + 8nh + 4h}{h}$$

$$= \frac{h(4h + 8(n+1) + 4)}{h}$$

$$= 4h + 8n + 4$$

Solution