

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

$$z(q) = 5q^2 + 5q + 9$$

$$z(q) = 5q^2 + 5q + 9$$

$$z(q+h) = 5(h+q)^2 + 5(h+q) + 9$$

$$= 5h^2 + 10hq + 5h + 5q^2 + 5q + 9$$

$$\frac{z(q+h) - z(q)}{h} = \frac{(5h^2 + 10hq + 5h + 5q^2 + 5q + 9) - (5(q+1)^2 + 5(q+1) + 9)}{h}$$

$$= \frac{5h^2 + 10hq + 5h}{h}$$

$$= \frac{h(5h + 10q + 5)}{h}$$

$$= 5h + 10q + 5$$

$$z(q) = 5q^2 + 5q + 9$$

$$z(q+h) = 5(h+q)^2 + 5(h+q) + 9$$

$$= 5h^2 + 10hq + 15h + 5q^2 + 15q + 19$$

$$\frac{z(q+h) - z(q)}{h} = \frac{(5h^2 + 10hq + 15h + 5q^2 + 15q + 19) - (5q^2 + 5q + 9)}{h}$$

$$= \frac{5h^2 + 10hq + 5h}{h}$$

$$= \frac{h(5h + 10q + 5)}{h}$$

$$= 5h + 10q + 5$$

$$z(q) = 5q^2 + 5q + 9$$

$$z(q+h) = 5(h+q)^2 + 5(h+q) + 9$$

$$= 5h^2 + 10hq + 5h + 5q^2 + 5q + 9$$

$$\frac{z(q+h) - z(q)}{h} = \frac{(5h^2 + 10hq + 5h + 5q^2 + 5q + 9) - (5q^2 + 5q + 9)}{h}$$

$$= \frac{5h^2 + 10hq + 5h}{h}$$

$$= \frac{h(5h + 10q + 5)}{h}$$

$$= 5h + 10q + 5$$

$$z(q) = 5q^2 + 5q + 9$$

$$z(q+h) = 5(h+q)^2 + 5(h+q) + 9$$

$$= 5h^2 + 10hq - 5h + 5q^2 - 5q + 9$$

$$\frac{z(q+h) - z(q)}{h} = \frac{(5h^2 + 10hq + 25h + 5q^2 + 25q + 39) - (5q^2 + 5q + 9)}{h}$$

$$= \frac{5h^2 + 10hq + 5h}{h}$$

$$= \frac{h(5h + 10(q+1) + 5)}{h}$$

$$= 5h + 10q + 5$$

Solution