

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

$$z(y) = 9y^2 + 5y + 1$$

$$z(y) = 9y^2 + 5y + 1$$

$$z(y+h) = 9(h+y)^2 + 5(h+y) + 1$$

$$= 9h^2 + 18hy + 5h + 9y^2 + 5y + 1$$

$$\frac{z(y+h) - z(y)}{h} = \frac{(9h^2 + 18yh + 5h + 9y^2 + 5y + 1) - (9(y+1)^2 + 5(y+1) + 1)}{h}$$

$$= \frac{9h^2 + 18yh + 5h}{h}$$

$$= \frac{h(9h + 18y + 5)}{h}$$

$$= 9h + 18y + 5$$

$$z(y) = 9y^2 + 5y + 1$$

$$z(y+h) = 9(h+y)^2 + 5(h+y) + 1$$

$$= 9h^2 + 18hy + 23h + 9y^2 + 23y + 15$$

$$\frac{z(y+h) - z(y)}{h} = \frac{(9h^2 + 18yh + 23h + 9y^2 + 23y + 15) - (9y^2 + 5y + 1)}{h}$$

$$= \frac{9h^2 + 18yh + 5h}{h}$$

$$= \frac{h(9h + 18y + 5)}{h}$$

$$= 9h + 18y + 5$$

$$z(y) = 9y^2 + 5y + 1$$

$$z(y+h) = 9(h+y)^2 + 5(h+y) + 1$$

$$= 9h^2 + 18hy + 5h + 9y^2 + 5y + 1$$

$$\frac{z(y+h) - z(y)}{h} = \frac{(9h^2 + 18yh + 5h + 9y^2 + 5y + 1) - (9y^2 + 5y + 1)}{h}$$

$$= \frac{9h^2 + 18yh + 5h}{h}$$

$$= \frac{h(9h + 18y + 5)}{h}$$

$$= 9h + 18y + 5$$

$$z(y) = 9y^2 + 5y + 1$$

$$z(y+h) = 9(h+y)^2 + 5(h+y) + 1$$

$$= 9h^2 + 18hy - 13h + 9y^2 - 13y + 5$$

$$\frac{z(y+h) - z(y)}{h} = \frac{(9h^2 + 18yh + 41h + 9y^2 + 41y + 47) - (9y^2 + 5y + 1)}{h}$$

$$= \frac{9h^2 + 18yh + 5h}{h}$$

$$= \frac{h(9h + 18(y+1) + 5)}{h}$$

$$= 9h + 18y + 5$$

**Solution**