

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

$$y(v) = 4v^2 + 9v + 5$$

$$y(v) = 4v^2 + 9v + 5$$

$$y(v+h) = 4(h+v)^2 + 9(h+v) + 5$$

$$= 4h^2 + 8hv + 9h + 4v^2 + 9v + 5$$

$$\frac{y(v+h) - y(v)}{h} = \frac{(4h^2 + 8vh + 9h + 4v^2 + 9v + 5) - (4(v+1)^2 + 9(v+1) + 5)}{h}$$

$$= \frac{4h^2 + 8vh + 9h}{h}$$

$$= \frac{h(4h + 8v + 9)}{h}$$

$$= 4h + 8v + 9$$

$$y(v) = 4v^2 + 9v + 5$$

$$y(v+h) = 4(h+v)^2 + 9(h+v) + 5$$

$$= 4h^2 + 8hv + 17h + 4v^2 + 17v + 18$$

$$\frac{y(v+h) - y(v)}{h} = \frac{(4h^2 + 8vh + 17h + 4v^2 + 17v + 18) - (4v^2 + 9v + 5)}{h}$$

$$= \frac{4h^2 + 8vh + 9h}{h}$$

$$= \frac{h(4h + 8v + 9)}{h}$$

$$= 4h + 8v + 9$$

$$y(v) = 4v^2 + 9v + 5$$

$$y(v+h) = 4(h+v)^2 + 9(h+v) + 5$$

$$= 4h^2 + 8hv + 9h + 4v^2 + 9v + 5$$

$$\frac{y(v+h) - y(v)}{h} = \frac{(4h^2 + 8vh + 9h + 4v^2 + 9v + 5) - (4v^2 + 9v + 5)}{h}$$

$$= \frac{4h^2 + 8vh + 9h}{h}$$

$$= \frac{h(4h + 8v + 9)}{h}$$

$$= 4h + 8v + 9$$

$$y(v) = 4v^2 + 9v + 5$$

$$y(v+h) = 4(h+v)^2 + 9(h+v) + 5$$

$$= 4h^2 + 8hv + h + 4v^2 + v$$

$$\frac{y(v+h) - y(v)}{h} = \frac{(4h^2 + 8vh + 25h + 4v^2 + 25v + 39) - (4v^2 + 9v + 5)}{h}$$

$$= \frac{4h^2 + 8vh + 9h}{h}$$

$$= \frac{h(4h + 8(v+1) + 9)}{h}$$

$$= 4h + 8v + 9$$

Solution