

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

$$f(v) = 5v^2 + 6v + 1$$

$$f(v) = 5v^2 + 6v + 1$$

$$f(v+h) = 5(h+v)^2 + 6(h+v) + 1$$

$$= 5h^2 + 10hv + 6h + 5v^2 + 6v + 1$$

$$\frac{f(v+h) - f(v)}{h} = \frac{(5h^2 + 10vh + 6h + 5v^2 + 6v + 1) - (5(v+1)^2 + 6(v+1) + 1)}{h}$$

$$= \frac{5h^2 + 10vh + 6h}{h}$$

$$= \frac{h(5h + 10v + 6)}{h}$$

$$= 5h + 10v + 6$$

$$f(v) = 5v^2 + 6v + 1$$

$$f(v+h) = 5(h+v)^2 + 6(h+v) + 1$$

$$= 5h^2 + 10hv + 16h + 5v^2 + 16v + 12$$

$$\frac{f(v+h) - f(v)}{h} = \frac{(5h^2 + 10vh + 16h + 5v^2 + 16v + 12) - (5v^2 + 6v + 1)}{h}$$

$$= \frac{5h^2 + 10vh + 6h}{h}$$

$$= \frac{h(5h + 10v + 6)}{h}$$

$$= 5h + 10v + 6$$

$$f(v) = 5v^2 + 6v + 1$$

$$f(v+h) = 5(h+v)^2 + 6(h+v) + 1$$

$$= 5h^2 + 10hv + 6h + 5v^2 + 6v + 1$$

$$\frac{f(v+h) - f(v)}{h} = \frac{(5h^2 + 10vh + 6h + 5v^2 + 6v + 1) - (5v^2 + 6v + 1)}{h}$$

$$= \frac{5h^2 + 10vh + 6h}{h}$$

$$= \frac{h(5h + 10v + 6)}{h}$$

$$= 5h + 10v + 6$$

$$f(v) = 5v^2 + 6v + 1$$

$$f(v+h) = 5(h+v)^2 + 6(h+v) + 1$$

$$= 5h^2 + 10hv - 4h + 5v^2 - 4v$$

$$\frac{f(v+h) - f(v)}{h} = \frac{(5h^2 + 10vh + 26h + 5v^2 + 26v + 33) - (5v^2 + 6v + 1)}{h}$$

$$= \frac{5h^2 + 10vh + 6h}{h}$$

$$= \frac{h(5h + 10(v+1) + 6)}{h}$$

$$= 5h + 10v + 6$$

**Solution**