

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

$$v(u) = 3u^2 + u + 8$$

$$v(u) = 3u^2 + u + 8$$

$$v(u+h) = 3(h+u)^2 + h + u + 8$$

$$= 3h^2 + 6hu + h + 3u^2 + u + 8$$

$$\frac{v(u+h) - v(u)}{h} = \frac{(3h^2 + 6uh + h + 3u^2 + u + 8) - (3(u+1)^2 + u + 9)}{h}$$

$$= \frac{3h^2 + 6uh + h}{h}$$

$$= \frac{h(3h + 6u + 1)}{h}$$

$$= 3h + 6u + 1$$

$$v(u) = 3u^2 + u + 8$$

$$v(u+h) = 3(h+u)^2 + h + u + 8$$

$$= 3h^2 + 6hu + 7h + 3u^2 + 7u + 12$$

$$\frac{v(u+h) - v(u)}{h} = \frac{(3h^2 + 6uh + 7h + 3u^2 + 7u + 12) - (3u^2 + u + 8)}{h}$$

$$= \frac{3h^2 + 6uh + h}{h}$$

$$= \frac{h(3h + 6u + 1)}{h}$$

$$= 3h + 6u + 1$$

$$v(u) = 3u^2 + u + 8$$

$$v(u+h) = 3(h+u)^2 + h + u + 8$$

$$= 3h^2 + 6hu + h + 3u^2 + u + 8$$

$$\frac{v(u+h) - v(u)}{h} = \frac{(3h^2 + 6uh + h + 3u^2 + u + 8) - (3u^2 + u + 8)}{h}$$

$$= \frac{3h^2 + 6uh + h}{h}$$

$$= \frac{h(3h + 6u + 1)}{h}$$

$$= 3h + 6u + 1$$

$$v(u) = 3u^2 + u + 8$$

$$v(u+h) = 3(h+u)^2 + h + u + 8$$

$$= 3h^2 + 6hu - 5h + 3u^2 - 5u + 10$$

$$\frac{v(u+h) - v(u)}{h} = \frac{(3h^2 + 6uh + 13h + 3u^2 + 13u + 22) - (3u^2 + u + 8)}{h}$$

$$= \frac{3h^2 + 6uh + h}{h}$$

$$= \frac{h(3h + 6(u+1) + 1)}{h}$$

$$= 3h + 6u + 1$$

Solution