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

$u(v) = 7v^2 + 8v + 1$

$u(v) = 7v^2 + 8v + 1$

$u(v+h) = 7(h+v)^2 + 8(h+v) + 1$

$= 7h^2 + 14hv + 8h + 7v^2 + 8v + 1$

$$\frac{u(v+h)-u(v)}{h} = \frac{\left(7h^2+14vh+8h+7v^2+8v+1\right)-\left(7(v+1)^2+8(v+1)+1\right)}{h}$$

$$= \frac{7h^2+14vh+8h}{h}$$

$$= \frac{h(7h+14v+8)}{h}$$

$= 7h + 14v + 8$

$u(v) = 7v^2 + 8v + 1$

$u(v+h) = 7(h+v)^2 + 8(h+v) + 1$

$= 7h^2 + 14hv + 22h + 7v^2 + 22v + 16$

$$\frac{u(v+h)-u(v)}{h} = \frac{\left(7h^2+14vh+22h+7v^2+22v+16\right)-\left(7v^2+8v+1\right)}{h}$$

$$= \frac{7h^2+14vh+8h}{h}$$

$$= \frac{h(7h+14v+8)}{h}$$

$= 7h + 14v + 8$

$u(v) = 7v^2 + 8v + 1$

$u(v+h) = 7(h+v)^2 + 8(h+v) + 1$

$= 7h^2 + 14hv + 8h + 7v^2 + 8v + 1$

$$\frac{u(v+h)-u(v)}{h} = \frac{\left(7h^2+14vh+8h+7v^2+8v+1\right)-\left(7v^2+8v+1\right)}{h}$$

$$= \frac{7h^2+14vh+8h}{h}$$

$$= \frac{h(7h+14v+8)}{h}$$

$= 7h + 14v + 8$

$u(v) = 7v^2 + 8v + 1$

$u(v+h) = 7(h+v)^2 + 8(h+v) + 1$

$= 7h^2 + 14hv - 6h + 7v^2 - 6v$

$$\frac{u(v+h)-u(v)}{h} = \frac{\left(7h^2+14vh+36h+7v^2+36v+45\right)-\left(7v^2+8v+1\right)}{h}$$

$$= \frac{7h^2+14vh+8h}{h}$$

$$= \frac{h(7h+14(v+1)+8)}{h}$$

$= 7h + 14v + 8$

Solution