3. Which of the following are correct calculations for difference quotient of:
$$u(m) = 3m^2 + 6m + 7$$

$$u(m) = 3m^2 + 6m + 7$$
$$u(m+h) = 3(h+m)^2 + 6(h+m) + 7$$
$$= 3h^2 + 6hm + 6h + 3m^2 + 6m + 7$$
$$\frac{u(m+h) - u(m)}{h} = \frac{\left(3h^2 + 6mh + 6h + 3m^2 + 6m + 7\right) - \left(3(m+1)^2 + 6(m+1) + 7\right)}{h}$$
$$= \frac{3h^2 + 6mh + 6h}{h}$$
$$= \frac{h(3h + 6m + 6)}{h}$$
$$= 3h + 6m + 6$$

$$u(m) = 3m^2 + 6m + 7$$
$$u(m+h) = 3(h+m)^2 + 6(h+m) + 7$$
$$= 3h^2 + 6hm + 12h + 3m^2 + 12m + 16$$
$$\frac{u(m+h) - u(m)}{h} = \frac{\left(3h^2 + 6mh + 12h + 3m^2 + 12m + 16\right) - \left(3m^2 + 6m + 7\right)}{h}$$
$$= \frac{3h^2 + 6mh + 6h}{h}$$
$$= \frac{h(3h + 6m + 6)}{h}$$
$$= 3h + 6m + 6$$

$$u(m) = 3m^2 + 6m + 7$$
$$u(m+h) = 3(h+m)^2 + 6(h+m) + 7$$
$$= 3h^2 + 6hm + 6h + 3m^2 + 6m + 7$$
$$\frac{u(m+h) - u(m)}{h} = \frac{\left(3h^2 + 6mh + 6h + 3m^2 + 6m + 7\right) - \left(3m^2 + 6m + 7\right)}{h}$$
$$= \frac{3h^2 + 6mh + 6h}{h}$$
$$= \frac{h(3h + 6m + 6)}{h}$$
$$= 3h + 6m + 6$$

$$u(m) = 3m^2 + 6m + 7$$
$$u(m+h) = 3(h+m)^2 + 6(h+m) + 7$$
$$= 3h^2 + 6hm + 3m^2 + 4$$
$$\frac{u(m+h) - u(m)}{h} = \frac{\left(3h^2 + 6mh + 18h + 3m^2 + 18m + 31\right) - \left(3m^2 + 6m + 7\right)}{h}$$
$$= \frac{3h^2 + 6mh + 6h}{h}$$
$$= \frac{h(3h + 6(m+1) + 6)}{h}$$
$$= 3h + 6m + 6$$

Solution