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

$$d(s) = 4s^2 + 3s + 8$$

$$d(s) = 4s^2 + 3s + 8$$
$$d(s+h) = 4(h+s)^2 + 3(h+s) + 8$$
$$= 4h^2 + 8hs + 3h + 4s^2 + 3s + 8$$
$$\frac{d(s+h) - d(s)}{h} = \frac{\left(4h^2 + 8sh + 3h + 4s^2 + 3s + 8\right) - \left(4(s+1)^2 + 3(s+1) + 8\right)}{h}$$
$$= \frac{4h^2 + 8sh + 3h}{h}$$
$$= \frac{h(4h + 8s + 3)}{h}$$
$$= 4h + 8s + 3$$

$$d(s) = 4s^2 + 3s + 8$$
$$d(s+h) = 4(h+s)^2 + 3(h+s) + 8$$
$$= 4h^2 + 8hs + 11h + 4s^2 + 11s + 15$$
$$\frac{d(s+h) - d(s)}{h} = \frac{\left(4h^2 + 8sh + 11h + 4s^2 + 11s + 15\right) - \left(4s^2 + 3s + 8\right)}{h}$$
$$= \frac{4h^2 + 8sh + 3h}{h}$$
$$= \frac{h(4h + 8s + 3)}{h}$$
$$= 4h + 8s + 3$$

$$d(s) = 4s^2 + 3s + 8$$
$$d(s+h) = 4(h+s)^2 + 3(h+s) + 8$$
$$= 4h^2 + 8hs + 3h + 4s^2 + 3s + 8$$
$$\frac{d(s+h) - d(s)}{h} = \frac{\left(4h^2 + 8sh + 3h + 4s^2 + 3s + 8\right) - \left(4s^2 + 3s + 8\right)}{h}$$
$$= \frac{4h^2 + 8sh + 3h}{h}$$
$$= \frac{h(4h + 8s + 3)}{h}$$
$$= 4h + 8s + 3$$

$$d(s) = 4s^2 + 3s + 8$$
$$d(s+h) = 4(h+s)^2 + 3(h+s) + 8$$
$$= 4h^2 + 8hs - 5h + 4s^2 - 5s + 9$$
$$\frac{d(s+h) - d(s)}{h} = \frac{\left(4h^2 + 8sh + 19h + 4s^2 + 19s + 30\right) - \left(4s^2 + 3s + 8\right)}{h}$$
$$= \frac{4h^2 + 8sh + 3h}{h}$$
$$= \frac{h(4h + 8(s+1) + 3)}{h}$$
$$= 4h + 8s + 3$$

Solution