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

$$v(f) = f^2 + 3f + 5$$

$$v(f) = f^2 + 3f + 5$$
$$v(f+h) = (f+h)^2 + 3(f+h) + 5$$
$$= f^2 + 2fh + 3f + h^2 + 3h + 5$$
$$\frac{v(f+h) - v(f)}{h} = \frac{\left(f^2 + 2hf + 3f + h^2 + 3h + 5\right) - \left((f+1)^2 + 3(f+1) + 5\right)}{h}$$
$$= \frac{h^2 + 2fh + 3h}{h}$$
$$= \frac{h(2f+h+3)}{h}$$
$$= 2f + h + 3$$

$$v(f) = f^2 + 3f + 5$$
$$v(f+h) = (f+h)^2 + 3(f+h) + 5$$
$$= f^2 + 2fh + 5f + h^2 + 5h + 9$$
$$\frac{v(f+h) - v(f)}{h} = \frac{\left(f^2 + 2hf + 5f + h^2 + 5h + 9\right) - \left(f^2 + 3f + 5\right)}{h}$$
$$= \frac{h^2 + 2fh + 3h}{h}$$
$$= \frac{h(2f+h+3)}{h}$$
$$= 2f + h + 3$$

$$v(f) = f^2 + 3f + 5$$
$$v(f+h) = (f+h)^2 + 3(f+h) + 5$$
$$= f^2 + 2fh + 3f + h^2 + 3h + 5$$
$$\frac{v(f+h) - v(f)}{h} = \frac{\left(f^2 + 2hf + 3f + h^2 + 3h + 5\right) - \left(f^2 + 3f + 5\right)}{h}$$
$$= \frac{h^2 + 2fh + 3h}{h}$$
$$= \frac{h(2f+h+3)}{h}$$
$$= 2f + h + 3$$

$$v(f) = f^2 + 3f + 5$$
$$v(f+h) = (f+h)^2 + 3(f+h) + 5$$
$$= f^2 + 2fh + f + h^2 + h + 3$$
$$\frac{v(f+h) - v(f)}{h} = \frac{\left(f^2 + 2hf + 7f + h^2 + 7h + 15\right) - \left(f^2 + 3f + 5\right)}{h}$$
$$= \frac{h^2 + 2fh + 3h}{h}$$
$$= \frac{h(2(f+1) + h + 3)}{h}$$
$$= 2f + h + 3$$

Solution