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

$$p(k) = 2k^2 + 8k + 4$$

$$p(k) = 2k^2 + 8k + 4$$
$$p(k+h) = 2(h+k)^2 + 8(h+k) + 4$$
$$= 2h^2 + 4hk + 8h + 2k^2 + 8k + 4$$
$$\frac{p(k+h) - p(k)}{h} = \frac{\left(2h^2+4kh+8h+2k^2+8k+4\right) - \left(2(k+1)^2+8(k+1)+4\right)}{h}$$
$$= \frac{2h^2+4kh+8h}{h}$$
$$= \frac{h(2h+4k+8)}{h}$$
$$= 2h + 4k + 8$$

$$p(k) = 2k^2 + 8k + 4$$
$$p(k+h) = 2(h+k)^2 + 8(h+k) + 4$$
$$= 2h^2 + 4hk + 12h + 2k^2 + 12k + 14$$
$$\frac{p(k+h) - p(k)}{h} = \frac{\left(2h^2+4kh+12h+2k^2+12k+14\right) - \left(2k^2+8k+4\right)}{h}$$
$$= \frac{2h^2+4kh+8h}{h}$$
$$= \frac{h(2h+4k+8)}{h}$$
$$= 2h + 4k + 8$$

$$p(k) = 2k^2 + 8k + 4$$
$$p(k+h) = 2(h+k)^2 + 8(h+k) + 4$$
$$= 2h^2 + 4hk + 8h + 2k^2 + 8k + 4$$
$$\frac{p(k+h) - p(k)}{h} = \frac{\left(2h^2+4kh+8h+2k^2+8k+4\right) - \left(2k^2+8k+4\right)}{h}$$
$$= \frac{2h^2+4kh+8h}{h}$$
$$= \frac{h(2h+4k+8)}{h}$$
$$= 2h + 4k + 8$$

$$p(k) = 2k^2 + 8k + 4$$
$$p(k+h) = 2(h+k)^2 + 8(h+k) + 4$$
$$= 2h^2 + 4hk + 4h + 2k^2 + 4k - 2$$
$$\frac{p(k+h) - p(k)}{h} = \frac{\left(2h^2+4kh+16h+2k^2+16k+28\right) - \left(2k^2+8k+4\right)}{h}$$
$$= \frac{2h^2+4kh+8h}{h}$$
$$= \frac{h(2h+4(k+1)+8)}{h}$$
$$= 2h + 4k + 8$$

Solution