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

$$q(r) = 8r^2 + 2r + 7$$

$$q(r) = 8r^2 + 2r + 7$$
$$q(r+h) = 8(h+r)^2 + 2(h+r) + 7$$
$$= 8h^2 + 16hr + 2h + 8r^2 + 2r + 7$$
$$\frac{q(r+h) - q(r)}{h} = \frac{\left(8h^2 + 16rh + 2h + 8r^2 + 2r + 7\right) - \left(8(r+1)^2 + 2(r+1) + 7\right)}{h}$$
$$= \frac{8h^2 + 16rh + 2h}{h}$$
$$= \frac{h(8h + 16r + 2)}{h}$$
$$= 8h + 16r + 2$$

$$q(r) = 8r^2 + 2r + 7$$
$$q(r+h) = 8(h+r)^2 + 2(h+r) + 7$$
$$= 8h^2 + 16hr + 18h + 8r^2 + 18r + 17$$
$$\frac{q(r+h) - q(r)}{h} = \frac{\left(8h^2 + 16rh + 18h + 8r^2 + 18r + 17\right) - \left(8r^2 + 2r + 7\right)}{h}$$
$$= \frac{8h^2 + 16rh + 2h}{h}$$
$$= \frac{h(8h + 16r + 2)}{h}$$
$$= 8h + 16r + 2$$

$$q(r) = 8r^2 + 2r + 7$$
$$q(r+h) = 8(h+r)^2 + 2(h+r) + 7$$
$$= 8h^2 + 16hr + 2h + 8r^2 + 2r + 7$$
$$\frac{q(r+h) - q(r)}{h} = \frac{\left(8h^2 + 16rh + 2h + 8r^2 + 2r + 7\right) - \left(8r^2 + 2r + 7\right)}{h}$$
$$= \frac{8h^2 + 16rh + 2h}{h}$$
$$= \frac{h(8h + 16r + 2)}{h}$$
$$= 8h + 16r + 2$$

$$q(r) = 8r^2 + 2r + 7$$
$$q(r+h) = 8(h+r)^2 + 2(h+r) + 7$$
$$= 8h^2 + 16hr - 14h + 8r^2 - 14r + 13$$
$$\frac{q(r+h) - q(r)}{h} = \frac{\left(8h^2 + 16rh + 34h + 8r^2 + 34r + 43\right) - \left(8r^2 + 2r + 7\right)}{h}$$
$$= \frac{8h^2 + 16rh + 2h}{h}$$
$$= \frac{h(8h + 16(r+1) + 2)}{h}$$
$$= 8h + 16r + 2$$

Solution